















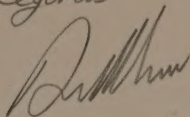






er Steve,  
As a crather morbid!) Souvenir  
of Glasgow!

Regards

A handwritten signature in cursive script, appearing to read "Bill Murray".

02. 11. 93.



TRANSACTIONS  
OF THE  
MEDICO-CHIRURGICAL SOCIETY  
OF GLASGOW.

*VOLUME III.*

*SESSIONS 1899-1900, 1900-1901.*

EDITED BY  
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TRANSACTIONS  
OF THE  
GLASGOW MEDICO-CHIRURGICAL SOCIETY.

—o—  
SESSION 1899-1900.

—o—  
MEETING I.—6TH OCTOBER, 1899.

—  
*The President, MR. H. E. CLARK, in the Chair.*

ON THE CHANGES IN SURGICAL THEORY AND TREATMENT IN  
THE PAST TWENTY-FIVE YEARS.

BY MR. H. E. CLARK.

IN seeking for a subject on which to address you this evening, I am struck by the difference in my position from what it would have been had I been called on to deliver a like address five and twenty years ago. Then there were a dozen subjects on which it seemed as if I had a special title to speak—on which I had special knowledge, and (apparently) had received a special revelation; now it seems doubtful if I have *one*. As age advances and experience ripens, each earnest man feels less and less certain of his generalisations, and requires to add to each such saving clauses and exceptions as materially weakens its force, until he begins to doubt if his opinions are worth publishing, and to question if he has indeed a “message for the ages.” The limited knowledge of the young man leads to self-assurance, and he is convinced that what he has to say is both new and valuable; while to his elder, who has wider

knowledge, it is neither. You will excuse me, therefore, if, instead of speaking of discoveries or new truths, I speak of experience, and endeavour to show what have been the changes in surgical theory and practice during the years I have held an appointment in connection with a hospital.

And first, as to the hospital with which I have been associated. In the progress of surgical science and practice the adaptation of our hospitals to new requirements and conditions has played an important part, and our wards, our operating theatres, our nursing arrangements, and our accessories have undergone perpetual change. While I hold it true that the rebuilding of the Royal Infirmary on the most approved plans is an urgent need, and cannot be set about too soon, I gratefully acknowledge the readiness with which the managers have in the past listened to our demands, and the earnest desire they have shown to accede to them. The structural alterations, if taken alone, have been great and highly beneficial, as none can deny who remember the small-pox ward in the basement of the east house, the stairs at the ends of the old medical house, and the divided wards in the main east building. The provision of the several operating theatres, though of more recent date, equally testifies to the progressive spirit of the managers.

In the matter of nursing, the improvement has been even more marked. In the old days it was not uncommon to have nurses who could neither read nor write, and who, consequently, ran no inconsiderable risk of giving the wrong medicine to the wrong patient. Faithful, hard-working women many of them were, willing to sit up all night with a "bad case" after having been on duty all day, and prepared to scrub a floor or tend a patient as might be required, but totally unfit to observe symptoms or even to take temperatures. My memory holds note of many women of the servant-girl class whose self-devotion and industry in our wards were beyond praise, and I yield to none in my admiration of them. But very many were drunken, immoral, and totally untrustworthy, and I rejoice that our nurses are now drawn from a higher social level, and that they have so largely been relieved from menial work. Next in importance to the skill of the surgeon is the capacity of the nurse, and I am satisfied that sound education and good intelligence are necessary if we are to get the fullest advantage from wide and thorough training; and only by such training can a well-equipped nurse be produced. No doubt we are accused of training them too highly and treating them too well, so that, on the one hand, they regard them-

selves as more essential than the medical attendants, and, on the other, are readily withdrawn from nursing by social and other calls. There is some truth in these objections; but, having had plenty of experience of uneducated and well-educated nurses, I have no hesitation in saying that education (to use a mathematical phrase) "raises a nurse to a higher power," and makes her a more effective instrument for good in the hands of the surgeon.

Of all the circumstances I can mention as influencing the progress of surgery in the past quarter of a century, the development of the antiseptic theory and practice has been—far and away—the most powerful. Its influence has been all-pervading, and even the questions of nursing, hospital construction, hospital management, the manufacture of instruments, and the teaching of students, have been and are being affected by it. I have said the *development* rather than the *origin*, for antiseptic treatment was originated by Lister a good few years before my story commences; but its development has been, in the main, a matter of the last twenty-five years. I have said that its influence is all-pervading, and it will be admitted that there is scarcely any department of surgical work unaffected by it. Sir William Savory, in the early days of the antiseptic controversy, published statistics to show that his results under old methods were as good as those of the most advanced advocates of antisepticism. In that paper he expressed the opinion that cases of strangulated hernia should be excluded from such statistics, on the ground that the recovery of the patient depended entirely on the condition of the bowel, and not on the kind of dressing used. In this there was much apparent truth; yet the statistics of strangulated hernia show a progressive diminution of mortality under antiseptic treatment, and it must be apparent to the judicial mind that a wound which heals without suppuration must result in a more rapid cure, cause less risk to the patient's life, and give a better cicatrix than when the wound is septic. Again, it might be thought that simple fractures were "outwith" the domain of aseptic and antiseptic work; but, besides the question of the condition of our hospital wards, and its influence on the process of healing, there is the fact that irregular and badly-displaced fractures are now treated (under aseptic conditions) by free exposure and the use of sutures.

It thus appears that the discussion of all the changes in surgical theory and practice brought about by Lister's doctrine involves little less than a complete treatise on surgery, and

this I am not prepared to inflict upon you this evening. It will suffice that certain salient examples should be put before you. Indeed, I shall not attempt to discuss the basis on which antiseptic practice rests, having reason to assume that you are quite familiar with it; and to save wearisome repetition I shall avoid as much as possible referring to it, leaving you to judge how far the changes in surgical practice described have been influenced thereby.

The first notable feature is the enormous increase in the number of operations performed. In private practice this has been largely instrumental in producing the constantly increasing number of "nursing homes," so admirably conducted, and for the most part so successful. The impetus given to operative work by the improved results obtained influences not only those who adopt the newer methods, but also those who stick by the old ways, and encourages alike operations where asepticism is everything and those in which it is of minor consequence. While making the statement that such an increase is acknowledged as having taken place in private practice, we can give no statistical confirmation of the fact. In hospital work it is otherwise, and on turning up the annual reports of the Glasgow Royal Infirmary I find that in the year 1873 the total number of operations performed (major and minor) was 397; in 1874 it jumped up to 542, and since then has been steadily rising; last year (1898) it reached the large total of 2,053, being more than five times the number recorded in 1873. Out of the total operations in the year 1873 a large proportion were amputations—195 out of the total of 397—while in the year 1898 the amputations were 239 out of a total of 2,053. It is noticeable that there is an increase, not a reduction, in the actual number of amputations performed; whereas we might expect that cases in which formerly amputation was considered necessary would now be treated by conservative methods, and thus amputations would get less frequent. That is no doubt the case; but we are dealing with a much larger "turnover" in the later year, and it must not be forgotten that more than half the major operations are for crushes so severe that no question of treatment without amputation can be entertained.

Last year (1898) the total number of patients treated in the surgical wards (including burns) was 4,123, so that, with 2,053 operations, about every second patient was operated on. In my own wards I think the proportion of cases operated on is somewhat greater than this. A few weeks ago I noted the fact that in my chronic ward three patients were awaiting



operation, and every patient besides these had undergone operation; and this is by no means a rare experience.

It would seem as if we were fast coming to a time when the knife will be regarded as the appropriate treatment for all surgical conditions; and it cannot be denied that this useful agent is sometimes employed without a patient trial of other (perhaps less heroic) means of treatment.

I would that with this increase in operations I could speak of a decrease in mortality; but the figures seem to be against this comfortable conclusion. The general statistics of the hospital are of no use for the purposes of this comparison, as they include burns, the mortality from which is usually very high, and varies very greatly from year to year. For some years past we have received from time to time special statistics of the cases treated by each surgeon. These have not appeared with perfect regularity, and, being intended for the private information of the members of the staff, cannot be put before you in the form in which they were originally given. The earliest year I have kept the statistics of is 1881, when the surgeon whose mortality was highest stood at 4·4 per cent, the lowest at 2·1 per cent, the latter being 0·4 per cent below that of the general population of Glasgow! In 1897 (the latest I happen to possess) the highest mortality was 11·08 per cent, and the lowest 5·9. Burns, cases of venereal disease, and those under the charge of the "specialists" are excluded in both years. It will be seen that in the latter year the lowest mortality was 1·5 above the highest of the former year. This is another example of the familiar fact that statistics can be made to prove anything. Our surprise at the apparent discrepancy is much diminished if we bear in mind two circumstances. The first is that in recent years the pressure on the surgical wards has been such that trivial cases could not be taken in, or, if admitted, had soon to be dismissed, to make room for more serious cases. The second is that a number of risky cases, such as those of intestinal obstruction, pyloric carcinoma, brain cases, tumour of the kidneys, of the bladder, &c., which were formerly treated in the medical wards, have in later days been transferred to the surgical wards for operation. Many who would, under the old *régime*, have been sent home to die, have under the new conditions been submitted to operation; in such cases the mortality is necessarily great, but many lives are saved which without operation would inevitably be lost.

While on the question of mortality, I may remind you that Dr. Thomas's statistics and those of Dr. Fleming demonstrate

that there has been a great drop in the number of deaths after amputation. The *Royal Infirmary Reports* show that in 1874, with 542 operations, there were 73 deaths, of which 51 were after amputation; in 1898, with 2,053 operations, there were 170 deaths, of which only 22 followed amputations, although, as stated above, the amputations were more numerous. These figures not only show a remarkable reduction in the mortality after amputations, but a still more remarkable one in that from operations generally; but from the greater number of the operations there come to be nearly 100 more deaths, and this accounts largely for the rise in the general surgical mortality.

Another feature of surgical practice in recent years is the readiness with which patients and their friends assent to operation. One still meets now and then with the parent (generally one who hails from the "Emerald Isle") who insists that his child shall "go to heaven with her leg on." But for the most part permission is granted with a charming confidence in the surgeon and an abounding faith in the miracles that surgery can accomplish. Nay, more, the friends of patients are generally very willing to give the surgeon a blank cheque on the Bank of Confidence, permitting him to do whatsoever pleases him. This facility is not without its dangers, both to the surgeon and patient, and is sometimes embarrassing. It has fallen to my lot more than once to lose patients to whom I have given advice that an operation was not necessary, and to find the credit and fees pass to a less scrupulous practitioner.

Not only have operations increased in number, they have also increased in extent, and patients are found to emerge successfully from an amount of cutting and carving which some years back would have seemed incredible. In dealing with neuralgia, for instance, what interference with delicate nerve plexuses and ganglia, with the arterial supply of important structures, and even with the brain itself, is not involved in the excision of the Gasserian or Meckel's ganglion! Yet, the mortality has not been exceptionally high. In operations for scirrhus of the female breast, also, the tendency to still wider and wider area of operation is one of the features of the surgery of the day. Twenty-five years ago it was not quite decided whether it was necessary to remove the mammary gland as well as the tumour; even those who advocated complete removal did so because the gland had already shown itself a fit soil for cancerous development, and not because they considered the cancer a local disease. Next came a



period when we removed lymphatics and glands only if obviously enlarged, and then we reached the stage of clearing out the axilla whether the glands were enlarged or not. Under the influence and example of many surgeons, but especially of Halsted of the Johns Hopkins Hospital, we are now taking away all the skin covering the mamma, about two-thirds of the pectoralis major, and the axillary fat with the contained glands. Not satisfied with this, however, Halsted himself has in recent cases removed the whole pectoralis major, the glands of the axilla and posterior triangle of the neck, in one or two cases dividing the clavicle, and taking away greater part of the pectoralis minor. We might think the course of operations could no further go, but Lister suggested many years ago the wisdom of amputation at the shoulder, or above the scapula, to ensure a thorough and complete operation, and this suggestion has in a few cases been carried out.

This development is worthy of consideration on other grounds than the mere question of the endurance of patients and the possible extent of operation. It marks a new and very important departure in pathology. The ground upon which such operations are being done in breast cases is that carcinoma is at the outset a purely local disease, and that, if thoroughly and effectively removed, a cure will be effected. The common teaching used to be that there was a constitutional taint or liability, and that local injury or irritation caused this liability to be locally manifested. In proof of this, much stress was laid on hereditary predisposition or the transmission of cancer from parent to child, and on the occurrence of the disease simultaneously in several organs or tissues. Even Syme, who constantly urged the necessity for wide removal, could not free himself from these ideas. In speaking of cases where glands were implicated, he says<sup>1</sup>:—"It is also incumbent on the surgeon to search very carefully for glands in the course of the absorbents that may have become affected, since it appears that the result of operations for carcinoma, when the glands are affected, is almost invariably unsatisfactory, however perfectly they may seem to be taken away. The reason for this probably is, that the glands do not participate in the disease, *unless the system be strongly predisposed to it*, and consequently their removal, however freely and effectually executed, cannot prevent the patient's relapse." Now, it must be admitted that much depends on the results of operation as offering proof of the one position or the other. A former colleague once said to me, in regard to a case of scirrhus

<sup>1</sup> *Principles of Surgery*, by James Syme, fifth edition, 1863, p. 80.

—"You may do whatever operation you please; you may remove as much or as little as you please, the result will be the same, the disease will recur." That is not the view now held; it is not the view I could myself defend. As far back as 1867, Moore, of the Middlesex Hospital, one of the most widely experienced surgeons in the treatment of cancer, announced his conviction as to the local origin of the disease, but his views were scouted by surgeons generally. Now they are very generally accepted. Halsted, in a paper published about a year ago, stated that, as the result of his very extensive removal operation, 52 per cent of his cases had no recurrence within three years, and other surgeons have published statistics little inferior to these. Volkmann has suggested that cases where there is no recurrence within that term may be regarded as "cured." It must, however, be admitted that the proof of the essentially local origin of cancer is not yet as positive as we would like. The period of three years is too short to be certain of a cure, the numbers in the statistics are too small, and we have still to face the facts as to the occurrence of cancer in members of the same family for several generations, and those cases where there are multiple simultaneous growths. If, however, we get the disease arrested in 50 per cent of our cases for more than three years (and cases are on record of some of these going on for ten or more years without recurrence) we have gained much; sufficient certainly to justify the largest operation.

The question of suppuration, its causation and prevention, bulked largely in the minds of the workers in pathology and surgery twenty years ago. Those of us who remember the extensive suppuration which took place in wounds in the days when we were dressers in the wards, and who have not forgotten the almost universal prevalence of pyæmia and septicæmia, can appreciate the change which the years since then have brought about in this respect. We no longer speak of "laudable pus," or regard suppuration as a necessary condition of our operations, and I presume we are all at one in considering suppuration to be impossible without the presence of pus micro-organisms. Some few writers assume that in thoroughly aseptic conditions no true *inflammation* is possible, but here they seem to me to carry their conclusions beyond the warrant of circumstances. In the early controversies as to septicism, Lister's opponents always attempted to pose him by saying, "Show us these germs you talk about so much;" and I have a vivid remembrance of a former teacher who delivered two clinical lectures, the first to prove that no

germs having the properties described existed or could exist, and the second that if they did exist they could have no effect in relation to the healing of wounds! Not many years passed before such objections were abundantly answered by the demonstration of an infinite variety of micro-organisms, and since then the study of such agents has grown into a science—the science of bacteriology—no longer limited by the narrow bounds of medical and surgical science, but affecting such widely different interests and industries as the manufacture of wines and beers, the rearing and fattening of cattle, horse tramways and racing stables, articles of food and articles of clothing, slaughter-houses and hair-factories. Much as has been accomplished in bacteriology, more remains to be done, and especially we desiderate a clearer definition of species, and a more thorough study of the influence of external conditions on the character and products of each form. If the germ theory of disease had done nothing as regards the actual treatment of disease; had not improved treatment or saved life (and we submit it has done both), its scientific value would still have been great, as leading to the marvellous discoveries of the microscope and the culture chamber in the bacteriological laboratory.

But we pass on to the discussion of more practical points. No greater changes have taken place in any department of surgery than in all that relates to the abdominal organs. The peritoneal cavity was long regarded as a veritable Pandora's box, which no one could open without being visited by innumerable plagues, difficulties, and dangers; and, when we consider the experience our predecessors had of septic peritonitis, we can see how substantial were the reasons that led them to such a conclusion. The pioneers of ovariectomy were the bold men who showed that, with reasonable precautions as to cleanliness, intraperitoneal operations were little, if at all, more dangerous than extraperitoneal ones. Surgeons, in whatever department of the art of surgery they practise, have especially to thank Thomas Keith, Spencer Wells, and Lawson Tait for demonstrating this fact. The confidence with which we now explore the abdomen for all sorts of diseases and conditions is very largely the outcome of their work. Their early results were the more remarkable, considering that the pedicle was treated by means of the clamp outside the abdominal cavity. Further, they demonstrated the possibility of successful abdominal surgery while the antiseptic theory was still in embryo, and even in their latest work owed little (if anything) to its development and practice.

Excision of the pylorus was first performed (though unsuccessfully) by Pèan, of Paris, in 1879; but it is to Bilioth and Wölfler that we are especially indebted for demonstrating how successfully it may be accomplished. Henry Morris, writing about fourteen years ago, says—"The operation has still about it so much of the nature of an experiment—perhaps even more of a mere surgical exercise, if I may be allowed the expression—that it is not possible to describe it as a thoroughly recognised surgical procedure." It cannot be said that since that time the position of the operation has materially improved. There are given us from time to time records of successful cases; but in by far the majority of cases of pyloric cancer the disease is too far advanced, the adhesions too extensive, the glandular implication too great for the operation to be anything but the "mere surgical exercise" Mr. Morris speaks of. But, not contented with removing cancer of the pyloric end of the stomach, surgeons have gone further. Schlatter, of Zurich, removed the whole of the stomach, including the cardiac and pyloric orifices, and his patient lived nearly a year and two months after the operation; and Brigham, of the United States, has been equally successful in a similar operation.

In operations for perforating ulcer of the stomach we see a more recent and decidedly more hopeful development of gastric surgery. Ulceration of the stomach is unfortunately not a rare condition, especially among domestic servants, and many lives are lost by perforation taking place, followed by septic peritonitis. Early recognition of the perforation is essential if life is to be saved; and although the anæmic and collapsed condition of the patient often leads the surgeon to hesitate as to whether he should interfere, he must remember that it is only by prompt action that a cure is possible. Unfortunately many of the ulcers are situated in the posterior aspect of the stomach, when not only is diagnosis difficult, but the perforation is hard to find and difficult to deal with. Dr. Lindsay Steven a short time back showed in this room a case where the ulcer had perforated one of the large branches of the gastric artery, with resulting fatal hæmorrhage.

Very recently it has been suggested that the perforating ulcers occurring in the course of enteric fever should be treated in the same manner as perforating gastric ulcers. That clearly is the right course to pursue; but the condition of the patient is not one where good results can be confidently expected, and so far the recoveries have been few in number.

Of operations for obstruction of the bowels I need say little.



It was only a few years back that one of our prominent physicians, at a meeting of this Society, challenged our results by questioning if there had ever been in Glasgow a recovery as the result of operation in a case of acute obstruction other than hernia. I presume he would not say so now, for there have come before us in recent years numerous cases of intussusception, strangulation by bands, obstruction due to tumours, &c., where the obstruction was acute, and operation was followed by cure. Certainly such operations will always be performed in conditions little favourable for interference, and the mortality will necessarily be high; but how hopeless is the patient's chance of recovery without abdominal section the conditions found at the operations and the *post-mortem* examinations alike attest. Instead of getting less ready to operate on such cases with the growth of years, I must confess myself more and more convinced as to the urgent need of early interference in cases of acute intestinal obstruction.

As regards intussusception, I may remark that in the early stages of that condition I hold that too little thought is usually given to the possibility of reduction by manipulation under chloroform. To be effectual it must be done early—certainly before the abdomen is much distended. In children who are well under the influence of an anæsthetic the colon can be readily distinguished, and if movements are made in the reverse manner to those practised in massage of the colon, the intussuscepted bowel can be carried back to the cæcum, and can be completely reduced. The manipulation is one of some delicacy, and requires patience; but (if done early) involves little risk, certainly less than inflation or large injections. In a recent case, where the intussusception was in the transverse colon, I, unfortunately, gave up the attempt too soon, and sent the patient into hospital for operation. On making an incision over the tumour I found the intussusception almost reduced, and was able quite easily to draw out the remainder of the invagination. The operation was a simple and short one, yet the patient never rallied from it, dying about three hours after. At the *post-mortem* examination the bowel was found to have been completely reduced, and not to have been in any way injured.

Of appendicitis much might be said. It has been a fashionable craze, a mine of wealth to enterprising surgeons, an explanation of all sorts of mental, moral, and physical peculiarities; the source of an inexhaustible fund of anecdotes, of bushels of professional "chaff." We have all heard of the man who put a proviso in his will that no *post-mortem* should

be performed, because his appendix had been removed *three times*; surely a sufficient reason for a *post-mortem* to be made, to see if it was still there. We have also heard of the man who had the words, "I have been operated on for appendicitis" stamped in indelible ink on the tail of his shirts, knowing that he might at some time or other be taken ill, run into hospital, and operated on for appendicitis before he knew where he was; but he was an American! A story more to the point relates to a patient of my own. He had been some time in my wards suffering from appendicitis; several consultations had taken place as to whether I should operate, and at these consultations there had been much divergence of opinion. I did not operate, and in due course he was dismissed well. Being met some time afterwards by one of my assistants, the latter said to him:—"Well, Pat, and what did you tell them at home about your illness?" to which the Irishman promptly replied—"Shure, sir, I said that the doctors providintially disagreed about my case, and so my life was spared!" Well, there certainly has been a great deal too much operating in appendix cases; that I think cannot be denied. But, on the other hand, when we consider that no more grave and dangerous condition exists than an appendix abscess which has burst into the peritoneal cavity and caused septic peritonitis, we must admit that something may be ventured to avert such a calamity. It has been the fate of most operators to cut down on the appendix and remove it, only to discover little or no disease, and yet again to leave a case untouched only to have reason to repent it when the conditions at the *post-mortem* were revealed. Hence it is impossible to lay down general rules; each case must be considered on its merits. The scoffer says that if all cases of appendicitis were left untouched by the surgeon, the mortality over all would be less than it is to-day, but even if this were true (which I cannot believe), the leave-alone policy would be unfair to those whom operation now saves. In the careful discrimination of symptoms and the due selection of cases lies safety, and already I think our "knowledge grows from more to more," and our position in regard to operation becomes more definite.

In the department of bladder surgery, the most noteworthy feature is the return to suprapubic method of cystotomy, and the almost complete abandonment of the perineal route to the bladder. That by the former a more complete exploration of the bladder can be effected is unquestionable, the working area also is wider and more free. While it is possible in most cases to get free exposure without incising the peritoneum, the fact



that this structure is no longer the bugbear it was to our predecessors, justifies our trenching on the peritoneal cavity if the circumstances of the case require. Electrical exploration of the bladder is of less use than we at one time thought it would be, but under certain conditions we can ascertain the presence, location, and size of tumours, calculi, &c., and hence are able to plan our operations before commencing, knowing what we have to deal with. In regard to vesical tumours, removal *per urethrum* with the lithotrite (or in the female with the finger, knife, or scissors) is much less likely to be complete and effective than by suprapubic incision, and the latter operation gives, therefore, a more complete security against recurrence. The only drawback in the suprapubic operation is imperfect drainage of the bladder afterwards. In the female this is overcome by a very large tube in the urethra.—larger certainly than a No. 20 bougie—and in the male by a perineal opening large enough to admit such a tube. Even for drainage purposes the suprapubic route may be used. At first sight it seems paradoxical to draw off fluid from the top instead of from the bottom of a cavity; but, in truth, when air is excluded the drainage is as perfect by the one method as by the other, with the additional advantage, in the case of suprapubic over perineal drainage, that the wound can be kept aseptic. For cystitis, especially the tubercular form, for hæmorrhage due to cancer, and even for prostatic enlargement, suprapubic drainage acts excellently, and the simplicity of the means by which it may be effected, as demonstrated by Dr. Rutherford last winter, puts it within the reach of all practitioners. One can scarcely realise that twenty-five years ago we were still practising the dirty, ineffective, and dangerous method of puncturing the bladder through the rectum.

For prostatic enlargement, the operations of castration, vasectomy, and prostatectomy, have been introduced and practised with only moderate success. The problems associated with this condition appear likely to be handed down for the surgeons of the twentieth century to solve.

Among the numerous subjects to which I might allude, did time permit, I may mention operations on the brain for tumours, epilepsy, cerebral abscess, paralysis, and other conditions. A quarter of a century ago the cranial cavity and its contents were looked on as being as dangerous to interfere with as the peritoneal cavity. On one occasion, during my term as house surgeon in the Royal Infirmary, Lister was asked to see, in the wards under my charge, a case of depressed fracture of the skull, due to the fall of a slate from a roof.

There was intracranial suppuration, and the question raised was, should trephining be done. "Yes," said Lister to my "chief," after weighty consideration, "you must trephine, but the man will die," and this was much the position of surgeons generally with regard to the use of the trephine. Now, we not only trephine without apprehension, but we even turn down large osteo-plastic flaps, explore the brain, return the flaps into place, and the patients seem little, if at all, damaged by the operation. But we are only at the commencement of operations on the brain. Deeper knowledge of localisation, and a more exact diagnosis of diseased conditions, will in the future lead to much wider and bolder operations than those hitherto practised. The wide field of insanity has barely been prospected by the operating surgeon.

Great hopes have been entertained as to the possibility of attacking certain diseases by the use of antitoxins, or what is commonly known as "sero-pathy" or serum treatment. The popular excitement some few years back on the announcement of Koch's discovery of the tuberculin antitoxin did an infinite amount of harm, for it raised to a high pitch the hopes both of the general public and of the profession, only to result in disappointment and despair. The whole thing was rushed so much that Koch's first tuberculin never had a chance of being thoroughly investigated, and its real merits or demerits discovered. I fear that the resulting disappointment has had its effect on all serum treatment, and that, beginning by being unduly credulous, we have finished by being unduly sceptical. However that may be, it must be acknowledged that the hopes at one time held as to the cures to be effected by serum treatment have not hitherto been justified, excepting in the case of one disease, namely, diphtheria. In that disease results which can only be called truly wonderful have been obtained, and even the explanation that the disease is much milder in type than it was some years ago does not seriously damage the credit of the treatment. In tetanus, however, the use of the antitoxin has been thoroughly disappointing. Our teachers of by-gone days told us that the cases of tetanus might be arranged in three groups—the ultra-acute cases where no treatment whatever had any effect, and which all died; the chronic cases, which all recovered; and the subacute cases, about which it was at all times impossible to say whether they would recover or die. In the first group the tetanus antitoxin has notably failed, possibly because the symptoms develop so rapidly that there is not time for it to act. In some of the subacute cases it has apparently done good, but

these are just the cases where all other remedies have had a certain measure of success; those, in fact, in which it is most difficult to be quite sure that the recovery has been brought about by the treatment. MM. Roux and Borrel have suggested the intracerebral injection of the tetanus antitoxine, on the ground that the tetanus toxine chiefly affects the nerve cells of the brain and spinal cord, and arguing that the antitoxine should therefore be applied directly to them. "If the toxine of tetanus is fixed in the central nerve cells," they argue "the patient cannot be cured by antitoxine administered hypodermically, as the central nerve cells do not take up the antitoxine from the blood, or at all events are not influenced by it; but if the antitoxine is directly injected into the cerebral substance, the progress of the disease is arrested." The cases treated in this way have been few in number, and have not been very successful. Dr. Gibb, of Paisley, a member of this Society, published a case in which he had adopted this mode of treatment with what he thought was substantial success; but, unfortunately, cerebral abscess developed later at the site of one of the punctures, and his patient died. Of the antistreptococcus serum I have no more favourable impression, whether it be used as a cure for sarcoma and carcinoma or as a prophylactic against septic infection. A patient was seen by me some months ago with a very obvious periosteal sarcoma of the shaft of the femur; I advised immediate amputation at the hip-joint, but pending arrangements being made for his admission to the infirmary, agreed that his doctor might try a series of injections of antistreptococcus serum (not the mixed toxins of Coley). We thought that even if no effect was produced on the sarcoma, the injections might serve a purpose in preventing septic mischief when the amputation was performed. The injections did not diminish the size of the tumour, or indeed produce any effect, beyond a slight temperature rise. The amputation was carried out about a week after the injections ceased; the patient stood the operation well, and all went on excellently for the first ten days, when his temperature began to rise, and he displayed symptoms suggestive of septic infection. These symptoms became gradually more pronounced, and he died nearly three weeks after the amputation. At the *post-mortem* examination small abscesses were found in the lungs and kidneys, and one small abscess in the tissues of the stump, beside the cut psoas and iliacus; the stump generally was well healed and sound. Now it is plain that the preliminary injections of antistreptococcus serum did not in this case prevent septic infection; indeed, I have a

suspicion that those very injections had much to do with the occurrence of pyæmia and with the fatal issue.

In regard to simple stricture of the œsophagus, much the same change of opinion has taken place as with reference to stricture of the urethra, and it is well understood now that the cause of failure in many cases is the stopping short of sufficient dilatation. Many of the text-books still tell us that the cure of simple stricture is never permanent, and that the patient will require to be taught to pass instruments himself, and will require to use them all his life. I have a patient who had so tight a stricture that I at first was obliged to use considerable force to get the smallest bougie through. I, however, persevered using metal bullet bougies, and passing them twice weekly for many months. The treatment extended over about two years, but the cure is now so perfect that between two dates nine months apart, when I tested the œsophagus, not the slightest contraction had apparently taken place. The dilatation was carried on till a bougie fully twice the size of the largest in the sets of gum-elastic bougies could be introduced with ease, and this is, I think, the secret of my success. Symond's tubes have been used as a means of keeping a permanent canal both in simple and malignant stricture, and Abbe's string saw is an ingenious means of dividing the stricture where it is so tight that no instrument can be passed. I have not tried it, but may mention how it is used. A small split shot is clamped on to a piece of silk, and this is swallowed by the patient and finds its way into the stomach. When this is judged to have taken place the stomach is opened, and the shot sought for and pulled out of the wound. A piece of strong whipcord is now attached to the end of the silk hanging from the mouth, and pulled through the stricture and out at the stomach. By a to and fro sawing movement the whipcord is made to divide the stricture, and a Symond's tube is inserted, the opening in the stomach and abdominal wall being then closed.

The surgery of the lungs and heart is somewhat limited. In the case of the former it consists in operations for empyema, the removal of portions of gangrenous lung, and the opening and washing out of cavities; and perhaps little more will be possible to the most speculative of our successors. The cases of surgical interference with the heart are increasing in number, and are all keenly interesting. Here is one of the latest:—"A man who had been stabbed in the left side was admitted into hospital under the care of Dr. Parrozzani, of Rome, in a collapsed condition, with scarcely perceptible pulse. An



operation was performed at once. A flap comprising the whole thickness of the thoracic wall, and including portions of the fifth, sixth, seventh, and eighth ribs, was turned inwards. The left pleural cavity was opened and found to be full of blood, and an opening an inch in length was seen in the pericardium. This was enlarged, and a stab in the left ventricle was found to have perforated the wall and entered the cavity. A finger could be passed through into the cavity of the ventricle. The wound was closed with four sutures, then the pericardial wound was closed, and finally the external incision. The patient recovered completely."

You will observe that I have not entitled my paper the "*progress of surgery*," but the "*changes which have taken place*;" for who shall define what *progress* is? So many of our new discoveries are but the resurrection of old ideas, and and at the end of a cycle of years we find ourselves back at the point at which we set out. Although Sir Roger de Coverley never changed the cut of his coat, he yet found himself in the height of fashion three times in his life, and perhaps on such occasions regarded himself as in the van of progress.

But I am sanguine enough to believe that much of the work which has been done in the department of surgery in the last twenty-five years will not require to be undone, for our science and practice have been freed from the dominion of old theory and fusty prejudices—from the humorist pathology and the doctrine of phlogiston—and from that reverence of authority which, if pushed too far, leads to stagnation or decay.

A thoughtful student once said to me that he could learn surgery better than medicine, because, said he, "Surgery is just commonsense!" Yes, it is commonsense—based on knowledge and regulated by experience. It is therefore subject to change with changing circumstances, and to advance with more and more power as, in the "procession of the ages," the horizon widens.

MEETING II.—20TH OCTOBER, 1899.

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*The President, MR. H. E. CLARK, in the Chair.*

I.—FERTILISATION AND SEGMENTATION IN THE ECHINUS.

BY DR. J. H. BRYCE AND DR. J. H. TEACHER.

Dr. Bryce and Dr. Teacher gave a lantern demonstration of micro-photographs, illustrating the processes of fertilisation and segmentation in the echinus. The preparations had been made from specimens and cultures procured at the Marine Zoological Station at Millport, and the photographs were very successful. The first set of slides was selected to show the progress of segmentation, and was from lower power preparations. The second set was shown under a much higher power, and the photographs were actually from sections of the ova, and illustrated practically all the different stages of fertilisation. In addition to the lantern demonstration, a few of the specimens were shown under the microscope.

II.—CASE OF LARGE MALIGNANT TUMOUR OF THE PYLORUS IN WHICH GASTRO-ENTEROSTOMY WAS PERFORMED, WITH IMMEDIATE RELIEF OF SEVERE OBSTRUCTIVE VOMITING.

BY DR. J. LINDSAY STEVEN AND MR. JAMES LUKE.

The specimen submitted for the examination of the Society consisted of the stomach and the portion of the small intestine which had been placed in communication with it. A very large tumour surrounded and considerably constricted the pyloric orifice, and occupied almost the entire pyloric half of the viscus. The mucous surface of the tumour was extensively ulcerated, and there were polypoid excrescences near the point where the artificial pylorus had been made. Union between the stomach and the intestine was perfect, and the mucous aspect of the aperture of communication between the stomach and intestine had the appearance of a natural opening. The anastomosis had been effected on the anterior wall of the stomach, a little above the greater curvature, and well free of



the tumour so far as its extent could be judged on the peritoneal aspect. The reason for fixing the bowel to the anterior surface was, that the tumour was so large that it would have been very difficult to get to a free portion of the posterior wall, and the efficiency of the opening was proved by the immediate relief of the vomiting. No attempt was made to remove the tumour, chiefly because at the operation Mr. Luke felt what he regarded as small secondary nodules on the under surface of the liver. These, however, at the *post-mortem* examination were found to be nodosities of a slightly cirrhotic liver, and in no sense secondary. It was, however, fortunate that no attempt to remove the tumour was made, as at the *post-mortem* examination distinct secondary nodules in the left pleura were discovered. The patient survived the operation in comparative comfort for three weeks, and was able to take an ordinary light diet, which had been impossible for her before.

The following is the history of the case, and the official account of the autopsy :—

Jane H., aged 54, was admitted to Ward 8, of the Glasgow Royal Infirmary, 9th September, 1899. For about a year or so she has not felt particularly well, although she had no special symptom to complain of. Since the beginning of the present year she has been unable to take any heavy food, but has had to confine herself to very light diet. She states that the heavy foods make her vomit; she usually vomits some hours after taking the heavy kinds of food. About the month of March, 1899, she noticed a swelling in her abdomen; it has not increased in size since she first noticed it, and sometimes it entirely disappears. Since the beginning of the present year she has been losing weight. For about a fortnight at the end of last year, her friends told her her face had a yellow colour; she herself did not notice this. Since onset of illness appetite has been good, and bowels have been constipated; she has never noticed any change in the colour or shape of the motions. Until the onset of the present illness she had good health.

Father died at 75, mother died at 55; cause of death is unknown to patient. She has three brothers and sisters alive and well; six brothers and sisters died in early childhood. She has had four children; three are alive and well, one died of measles.

She presents an ill-nourished and wasted appearance. Face is slightly cachectic. Tongue is clean. Pulse numbers 76; it is of small volume and low tension, regular in force and rhythm. Respirations number 14. As the patient lies quietly in the dorsal decubitus, a very obvious swelling, causing considerable prominence of the lax and retracted abdominal wall immediately above the level of the umbilicus, and almost equally on either side of it, is visible. The swelling is elongated in the transverse direction, its lower margin corresponding to about the level of the umbilicus, the upper margin much less definite, and merging into surrounding abdominal wall about two fingerbreadths above the umbilicus. The swelling extends somewhat farther to the left of the umbilicus than to the right. The somewhat nodulated appearance of the skin over it suggests a similar condition of the tumour itself. The mass moves very freely with the respirations, and the tumour appears to be situated mainly in the greater curvature of the stomach; the right extremity of the neoplasm being probably at pylorus, the left being easily palpable as far to the left as one fingerbreadth from the point of the ninth rib. Percussion over the nodule is dull, but immediately below and to either side of it tympanitic resonance is easily obtained. It is apparently absolutely painless on palpation, and can be felt to be finely nodulated. It is freely movable within the abdominal cavity, and she reports that it is sometimes felt much farther to the right than at present. The liver is not enlarged.

The free mobility of the tumour was in favour of the possibility of its removal, especially as no evidence of secondary disease in the liver could be made out. On the other hand, Dr. Lindsay Steven thought that the tumour was so large, and the patient so emaciated, that the issue of such an attempt must be doubtful. However, as the patient was most anxious that something should be attempted, and, as on account of the severity of the vomiting, she had apparently only a few days to live, Mr. Luke agreed to cut down upon the tumour, and do an anastomosis if removal were impracticable. There can be no doubt that the patient's life was prolonged, and her comfort greatly increased by the operation.

Patient died on 11th October, and the following is the report of the *post-mortem* examination:—

"*External appearance.*—A greatly emaciated body. *Post-mortem* rigidity present.

"*Thorax.*—Pericardium presents healthy characters. Heart is small and atrophic, coronary vessels being very prominent, and the muscular tissue has a peculiar round translucent appearance.

"Aortic and pulmonary curtains are competent, and the heart, except for atrophy, presents healthy characters.

"The lower border of the left lung and the left pleura are studded with small tumour nodules, but otherwise present healthy characters. The right lung and the right pleura appear quite healthy.

"On opening the abdomen, the transverse colon is found to be much distended with gas, and also shows prominently below the edge of the costal cartilage.

"*Abdomen.*—The stomach is collapsed and almost empty. Its pyloric extremity is the seat of an extensive mucous epithelioma, causing great narrowing of the pylorus. A loop of upper part of jejunum has been stitched to the lower border of the stomach, about midway between the cardiac and pyloric ends, and a very perfect opening and connection between the stomach and intestine has been formed. Near the opening there is a villous polypus, about the size of a pigeon's egg, connected by a pedicle with the mucous membrane of the stomach and the stomach wall above. The opening shows extensions of the epithelioma towards the cardiac end.

"The liver is small, and appears in a somewhat cirrhotic condition, with numerous cyst-like dilatations of the vessels and ducts. No secondary tumour formation is found in it. Gall-bladder is small, and contains fluid bile.

"The spleen is very small but congested.

"Pancreas is of fair size, and appears healthy.

"Lymphatic glands of mesentery are, many of them, enlarged, apparently from secondary tumour formation.

"Suprarenal bodies present healthy characters.

"Kidneys are small, and show advanced interstitial nephritis, with numerous urinary cysts.

"Left ovary and Fallopian tube are adherent to upper surface of uterus from some old inflammatory change. Right ovary is healthy, as are the other pelvic organs.

"Intestines present healthy characters.

"Stomach, with attached portion of jejunum, is preserved. A portion of the liver is also preserved for further investigation."

III.—CASE OF SEVERE HÆMATEMESIS FROM A SIMPLE ULCER OF THE STOMACH, IN WHICH THE STOMACH WAS OPENED AND THE EDGES OF THE ULCER BROUGHT TOGETHER BY SUTURES.

BY DR. J. LINDSAY STEVEN AND MR. JAMES LUKE.

Dr. J. Lindsay Steven submitted the specimen, and read the following notes of the case:—

On a previous occasion I presented to the Society specimens in which death resulted from severe hæmorrhage due to "pore-like" erosions of the gastric artery, and in one of which my colleague, Mr. Pringle, opened the stomach in a vain endeavour to find and close the bleeding point. I propose to-night to show you a preparation from the stomach of a man who was admitted under my care on the 2nd October, 1899, on account of severe hæmatemesis. The hæmorrhage in this case was perhaps neither so profuse nor so continuous as in the previous cases.

It had, however, recurred on a number of occasions since the month of July, 1899, and he was suffering from an exceptionally severe seizure at the time of his admission, large quantities of rich coffee-coloured fluid being evacuated. He was very weak and very greatly emaciated, the abdominal wall being excessively retracted. For about five months before admission, he had been much troubled with loss of appetite, pain after food setting in usually about two hours after a meal, and frequent attacks of vomiting. His bowels were very much constipated. The retraction of the abdomen was so great as to resemble that frequently observed in emaciated cadavers. The patient was a married man, aged 38, whose previous health and family history were quite satisfactory. The heart and the lungs were found to be healthy, and I formed the opinion that the hæmorrhage was in all probability coming from an ulcer, and the excessive emaciation seemed to me likewise to indicate that the ulcer might be malignant. I did not think that the lesion was likely to be a "pore-like" erosion, as there was an entire absence of the terrible arterial bleeding, both from the gullet and rectum, which was such a striking feature in the cases previously brought under the notice of the Society. As, however, the man's life was in some jeopardy, and he was very willing to submit to anything which promised even a chance of relief from recurrence of the hæmatemesis, he was transferred to Ward 17, under the care of Mr. Luke, on the 5th October. For some time after his



admission to the surgical ward the hæmatemesis ceased. It recurred very severely on the 15th October, blood being also passed from the intestine. Mr. Luke and I saw him in the evening, when he was found to be much exhausted, and we agreed that the operation should be performed at once.

The specimen shows the pyloric end of the stomach. The sutured wound, through which the gastric cavity was exposed, is seen in the anterior wall; and near the pylorus the simple ulcer, from which the bleeding took place, is observed. The edges of the ulcer, except at the distal extremity, have been firmly brought together by three sutures. In addition to this recent ulcer, the ring of the pylorus is observed to be considerably contracted by fibrous tissue, the result of the cicatrisation of an old ulcer. There was no evidence of the ulcer being malignant in nature.

Mr. Luke then described the stages of the operation which he had performed. The site of the ulcer was readily recognised by the presence of fibrous bands which had been formed between the peritoneal surface of the stomach, corresponding to the site of the ulcer, and the under surface of the left lobe of the liver. In order to get sufficient room to permit of the stomach being opened, these adhesions had to be partially separated. When the finger was introduced, the floor of the ulcer lying close to the pylorus was easily felt. The surface of the ulcer was then scraped with a Volkmann's spoon, and, with considerable difficulty, owing to the adherent peritoneal surface, its edges were brought together by three sutures. Intravenous injection of saline solution was practised before removing the patient to his bed. He recovered from the chloroform, and was able to speak to those waiting upon him, but he sank from exhaustion two or three hours after the completion of the operation.

#### IV.—CASE OF PURULENT PERICARDITIS.

BY DR. J. LINDSAY STEVEN.

The specimen which I now submit for your inspection was obtained from the body of a female child, aged  $2\frac{1}{4}$  years, who was under my care in the Royal Hospital for Sick Children in September last. The specimen consists of the heart and pericardium, both surfaces of which are thickly covered with pus-infiltrated fibrin. The wall of the pericardial sac is greatly thickened, and its cavity greatly enlarged. At the *post-mortem* examination the pericardial sac was found to contain about



3 oz. of creamy-yellow pus. The heart was found to be displaced upwards and towards the right, its apex being in the fourth interspace, close to the edge of the sternum. There were old pleural adhesions at the base of the right lung, and a recent fibrinous pleurisy of moderate severity was found on the left side. The peritoneal cavity contained a small quantity of pale straw-coloured fluid, and there were flakes of recent fibrin on the surface of the liver. The bronchial tubes presented well-marked congestion of their mucous surfaces. The other organs of the body presented, on the whole, healthy characters. The interior of the heart has not been examined.

The child was admitted to the hospital on the 24th August, 1899, presenting the symptoms of broncho-pneumonia. Fifteen months before her admission she had suffered from measles, followed by a pulmonary complication from which she recovered well. She remained well till July, 1899, when she had inflammation of the lungs, and was laid up for a fortnight. After this she never recovered her health, and was admitted much emaciated, sweating profusely day and night, and with a temperature ranging between 100° and 102° F. There was well-marked evidence of rickets. She had very little cough; but there were distinct dulness and diminished breathing at the base of the right lung behind. The left lung appeared to be healthy. The respirations averaged about 40, and the pulse about 130. The heart presented nothing abnormal, and there was no enlargement of the cardiac area. The child remained in much the same condition until 6th September, when a change for the worse was observed. The breathing became much more rapid, though not greatly embarrassed, and the pulse frequently was over 160. The temperature, which for a few days before this had been somewhat lower, never became much higher than it was at the time of admission. Perhaps, however, the most striking change was that observed in connection with the cardiac dulness. The area became much enlarged, extending upwards to near the manubrium sterni, and laterally to half an inch beyond the nipple on the left and to an inch and a half beyond the edge of the sternum on the right. There never was any doubt in my mind that this dulness indicated pericardial effusion; the heart sounds were muffled and distant, but pericardial friction was never detected. In the course of a day or two the area of cardiac dulness became somewhat diminished, but beyond this no material change took place, and the child died on 19th September without any further clinical development, except great cyanosis

and lividity of the fingers and toes during the last two days of life.

The chief point which indicated the onset of the pericardial effusion was no doubt the great and somewhat sudden enlargement of the cardiac area, and this of course explained the increase in frequency of the pulse and respiration. There was never, however, any of the extreme distress of breathing or great irregularity of the pulse which so commonly accompanies pericarditis with effusion. In this case I did not seriously consider the propriety of performing paracentesis pericardii, because I regarded the effusion as in all probability serous, and the slight diminution in the extent of the dulness which occurred after a day or two led me to suppose that absorption was in progress. Had, however, the operation been performed in the situation which a previous experience would have led me to select—viz., the fourth interspace, about half an inch to the left of the sternum—I cannot help thinking that the point of the needle would have entered the wall of the heart, which, as the *post-mortem* showed, was displaced upwards and towards the right, and somewhat firmly fixed in its abnormal situation. Another point of interest in the case was the evidence afforded by the autopsy of the tendency of the other great serous cavities to partake in the acute inflammation which had so seriously involved the pericardium. This is a feature of purulent pericarditis of which I have already had experience. Had I known at the beginning that the effusion was purulent, I would not have hesitated to ask a surgical colleague to open and drain the pericardial sac, although, from the tendency to involvement of the pleura and peritoneum in such cases, the result of such an operation could not be regarded as altogether hopeful; still I think it would have given the patient the best chance.

#### V.—CASE OF PURULENT PERICARDITIS IN WHICH PARACENTESIS PERICARDII WAS PERFORMED.

BY DR. J. LINDSAY STEVEN.

In connection with the case of purulent pericarditis which I have just described, it will be interesting to the Society if I now submit the notes of the only other case of the kind with which I have had to deal clinically. In this instance the disease occurred in a man, and paracentesis pericardii was performed, with the evacuation of 19 oz. of pus from the pericardial sac. The patient only survived the operation for

some six hours, but the clinical history and the facts revealed on *post-mortem* examination seem to me to indicate clearly enough that the result would in all probability have been the same even if the operation had been performed a day or two earlier. This case, like the former one, illustrates that the inflammatory process in purulent pericarditis may not be confined to the pericardium itself. Both pleuræ were somewhat extensively involved, and the lower lobe of the right lung was found to be in a state of red hepatisation. With such a combination of morbid processes, the relief afforded by paracentesis is very likely to be only of a temporary character. I shall now read the notes of the case as they were entered in the Ward Journal by my assistant, Dr. Archibald Young, to whom I am indebted for the great care he bestowed upon the case.

James D., æt. 35, was admitted to Ward 7 of the Glasgow Royal Infirmary on 22nd February, 1896, complaining of shortness of breath of a fortnight's duration.

At the age of 19 he joined the army, and was in service as a soldier for six years and four months, during which time he was in a number of places—viz., Malta, Plymouth, Chatham, Aldershot (twice), Egypt (fifteen months, in the course of which he was in the engagement of Tel-el-Kebir). The only place where he found his work heavy was at Aldershot, where in summer time the training is very severe.

He emphatically denies ever having had venereal trouble, and indeed he maintains that up to the last fortnight he was an exceptionally healthy man. From the time he left the army in 1885, he has been employed mostly in shipbuilding yards, where he has exceptionally heavy lifts (iron plates). He never felt himself get a strain. For three weeks he has been unemployed; at the end of his first week he began to feel out of sorts, and in course of the next day or two a slight cough, which he has had for some six months, became much worse, and his friends told him he was failing. Gradually he found himself getting breathless, the breathlessness not causing him any particular anguish, but the hurried breathing, as he says, being beyond his control. First noticed in any striking way in connection with a somewhat severe precordial pain developed upon undue exertion, but later being almost constant, and for the past week so extreme as almost to amount to "orthopnœa." For the past fortnight, too, his legs have been œdematous, particularly so after his being upon his feet for some time. With the cough there has been, for the past two

weeks, a rather more copious expectoration of a frothy aërated type. He still takes his food well, and his bowels are regular; he knows of no urinary trouble. He has had no sickness or vomiting.

His father died eight months after a fall; his mother suffered much from some "asthmatic" trouble. He has three brothers and one sister living; a brother and sister died in infancy, cause of death unknown.

He has been a pretty heavy drinker, and he confesses that just before he took ill he had had a drinking bout, and lay out one night, and felt thoroughly chilled on waking in the morning.

The most prominent feature in the case is the "dyspnœa," which at time of note almost amounts to orthopnœa.

The respirations, at present numbering 36 per minute, are shallow and rather noisy, expiration being accompanied by slight gurgling of mucus in the throat.

The pulse numbers 96 per minute, is very distinctly intermittent, missing a beat at irregular intervals of 5, 8, 11, &c. Its tension is low, but the force of the successive beats seems constant.

His temperature on admission was 98° F.; at 6 P.M., 99·6° F.; and at midnight, 98° F. At intervals he has a rather troublesome cough, and the spit is of a highly aërated frothy type, with a more fluid portion which is somewhat brown.

His tongue is moist, slightly coated, and flabby.

The pupils are equal, medium, and respond to light and convergence.

On examination of the chest the following points are made out:—The percussion note over the lungs, back and front, is highly resonant, except possibly at the right base posteriorly. On palpation over the right lung at its lower part in front, posteriorly, and in the infra-axillary regions, a very marked fremitus, evidently bronchial and not pleural, is remarked; this is very slightly developed on the left side.

Vocal fremitus and resonance are investigated without result. The respiratory murmur all over both lungs is very markedly bronchial; expiration distinctly prolonged, and over the right base posteriorly almost imparting a typical tubular quality. A good deal of sonorous râle everywhere accompanies the respiratory murmur, particularly the expiratory portion, and especially so over the right base.

The cardiac dulness is much enlarged. At greatest transverse width it amounts to 5½ inches, the right border being about 1¼ inch to right of middle line, the upper traversing the third



rib, the outer  $4\frac{1}{2}$  inches from middle line. The apex beat is neither visible nor tangible, and the cardiac sounds can hardly be heard either at apex or base. There is no precordial bulging or suprasternal pulsation.

The liver dulness at middle line measures  $1\frac{1}{2}$  inch, in nipple line  $3\frac{1}{4}$  inches, and in mid-axillary line  $3\frac{1}{2}$  inches. The stomach seems dilated, and percussion over the epigastric region gives a dull note, but with a rather tympanitic quality. There is a sudden transition from the dull to the highly resonant note over the rest of the abdomen, the dull area having a crescentic outline reaching to within  $1\frac{3}{4}$  inch from umbilicus, and passing more to the right than to the left.

The abdomen generally is large, and its walls resistant, preventing deep palpation. The legs, from the knees down, are somewhat cedematous.

The urine, of a rather high colour, is acid in reaction; specific gravity 1016, slightly albuminous, with a copious deposit of urates, and to the microscope showing amorphous urates and a few granular or fatty casts.

*23rd February, 1896.*—Pulse to-day exceedingly irregular in rhythm; the beats chiefly, however, going in pairs, suggesting the "pulsus bigeminus." This character, although not constant, is fairly well brought out by the sphygmograph, and, in addition, there is seen in the tracing a markedly hyperdirotic character, making each successive two beats seem like four. Spit still abundant and bronchitic.

*24th February, 1896.*—To-day patient feels rather better, though still breathless. The pulse is still markedly intermittent and difficult to count. The cardiac dulness is made out to-day to measure fully 6 inches across its right border, fully  $1\frac{1}{2}$  inch to right of middle line, its upper border crossing the second rib, and its outer border just outside the former mark. The heart sounds are still almost inaudible, a little better heard, however, towards the sternum. There seems to be slight precordial bulging. The cheeks, tips of ears, and nose seem very ruddy.

*25th February, 1896.*—The complaint is still of dyspnœa; he has no pain, and he says if his breath were better he would be all right. Expectoration still abundant, very frothy, and of a muco-purulent type. Decubitus, half-sitting up on the right side, with a tendency to turn on the face. Distinct œdema of the back of the right hand. Pulse still highly irregular and intermittent, and is on that account difficult to number. Respirations, still accompanied by much wheezing and mucus gurgling in the throat, equal to 32 per minute.

At eight o'clock this morning the temperature was  $101^{\circ}$  F., having never previously reached a higher point than  $99.6^{\circ}$  F. Transverse measurement of cardiac dulness  $6\frac{1}{2}$  inches to-day, right border  $1\frac{3}{4}$  inch to right of middle line, left  $4\frac{1}{4}$  inches to left of middle line, upper border at upper edge of second rib. The sounds are very distant, especially at apex, where they are almost inaudible, unaccompanied by friction sounds. On careful inspection, it is thought that there is very slight bulging in the precordial area, *i.e.*, between the left nipple and the sternum. Bronchial fremitus is still very marked over the lower part of the right lung, and the excess of sonorous and moist râle in the right lung as compared with the left is probably explained by the tendency to lie on the right side. The urine this morning is loaded with pink urates; specific gravity 1022, and containing a moderate trace of albumen.

*27th February, 1896.*—The patient has had a very restless night, chiefly owing to the extreme dyspnoea which has all along formed his only complaint. In view of the performance of paracentesis pericardii, Dr. Middleton was asked to see him in consultation this morning, when an enormous extension of the dulness was found to have taken place.

On the whole, Dr. Middleton's outline, especially as regards the upper margin, was higher slightly than that afterwards made out by Dr. Lindsay Steven. As regards the extension of the dulness into the right mammary region, Dr. Lindsay Steven carried the upper margin of this about a finger-breadth higher than that mapped out by Dr. Middleton.

The upper margin of this portion of the dulness cut the third right rib, and extended towards the axilla as far as the anterior axillary line, where it was replaced by a dull tympanitic note having a definitely Skodaic character. Superiorly, the upper level of dulness reached quite to the first intercostal space, Dr. Middleton carrying it a little higher than this. The upper limit of the cardiac dulness had quite definitely a cone shape. The left border slopes gently down and to the left, passing distinctly outside and above the nipple as far as the anterior axillary line. It thus happens that, below the line of the nipples, the percussion from axilla to axilla is absolutely dull.

The cardiac sounds were quite inaudible to-day. Distinct dulness is found at the right base posteriorly, merging into the Skodaic percussion in the right infra-axillary region. This dulness extends as high as the level of the fifth rib, and Dr. Middleton was of opinion that the whole right back



posteriorly had an impaired percussion tone. On auscultation over the dull area, distinct bronchial breathing, with moist and dry râle, was audible, and over both lungs behind abundant bronchitic râles could be made out. In the left interscapular region, from the third to the sixth dorsal spine, a limited area of dull percussion was distinctly made out. In the epigastric region a rounded resistant mass, filling the whole hollow of the hand, and evidently a much depressed left lobe of the liver, is easily made out. The lower margin of hepatic dulness is greatly depressed.

It was agreed that all the evidence pointed to a very large pericardial effusion of renal rather than rheumatic origin. It was not decided as to whether the whole of the right mammary dulness was due to pericardial distension, and the possibility of there being a localised pleural effusion as well was kept in view. Dr. Middleton agreed with Dr. Lindsay Steven in thinking that, in the face of no improvement taking place in the respiration soon, it would be proper to tap the pericardium.

*11 p.m.*—About 8 P.M. to-night, no improvement having occurred, Dr. Lindsay Steven introduced a trocar and canula through the fourth left intercostal space, about 1 inch to the left of the sternum. With some difficulty a thick purulent fluid began to flow, at first slightly mingled with blood. With the aid of the exploring syringe the flow was rendered more rapid, apparently by the removal of some thicker material, into which the canula's point had first been inserted; once the flow was thus established it kept on very steadily, and in the course of three-quarters of an hour exactly 19 oz. of thick, creamy, non-odourous pus were removed. At the end of this time, however, as the patient was complaining loudly of his inability to bear the operation longer, the canula was withdrawn, although it was pretty certain that a considerable quantity of pus still remained in the pericardial cavity.

Upon microscopic examination, the most characteristic pus corpuscles are seen. The pulse fluctuated considerably during the tapping, and after the puncture had been dressed the patient, though admitting his breathing to be easier, complained of a generalised pain over the left side.

Note by nurse from 11 P.M. to time of death at 2.50 A.M.:—

*"27th February, 1896 (11 p.m.).*—Patient is very restless, complaining of pain in the left side. He seems unable to lie on the right side, finding greater relief in sitting up in bed.

Patient has coughed very little within the last hour, but has great difficulty in breathing.

"1 a.m.—Had hypodermic injection (one eighth of a grain of morphia) given, and a small linseed poultice applied to the left side. Patient is very much troubled with thirst; has had small pieces of ice to suck.

"2 a.m.—Patient has not slept any; very restless, and still sitting up. Has been wandering very much in his talk. Breathing still very bad, but does not complain so much of the pain in his side or chest. Pulse 45. Poultice renewed."

The following is the *post-mortem* report by Dr. Charles Workman:—

"Body that of a well-developed and well-nourished man. Rigor mortis pronounced. On the front of the chest there is the mark caused by a trocar passed in to drain the pericardium. On opening the thorax, about a pint of greenish opalescent fluid escapes, along with some flakes of fibrin, from the left pleura, which is in the condition of an acute pleuritis.

"The right pleura contains but little fluid. The left lung, except for the pleurisy, is in a very healthy state. The lower and middle lobes of the right lung are in a state of red hepatitis, the consolidation being very firm, and over this part of the lung there is a fresh fibrinous pleuritis. The pericardium is greatly thickened and congested. The cavity is lined with a thick, firm layer of fresh yellow fibrin, and filled with yellow 'laudable' pus (12 to 15 oz.). The parietal and visceral layers are closely adherent over the front of the heart, probably from a former attack of pericarditis.

"The right ventricle is dilated and filled with coloured clot. The left is collapsed and almost empty, its walls somewhat hypertrophied. Aortic and pulmonary curtains competent. Other valvular structures also healthy. Aorta healthy.

"Stomach and intestines, examined from without, are healthy. Stomach perhaps somewhat larger than usual, but of normal shape.

"Pancreas healthy. Spleen congested, but not much enlarged. Liver large, and on section has appearance of pronounced passive hyperæmia. Gall-bladder contains fluid bile, and is quite healthy. Kidneys of fair size; their capsules, however, removed with difficulty, leaving a roughened cortex. On section, they are seen to be much congested, but the cortex is not much atrophied."

## MEETING III.—3RD NOVEMBER, 1899.

*The President, MR. H. E. CLARK, in the Chair.*

I.—CASE OF PRIMARY SARCOMA OF THE TONSIL: SUCCESSFUL  
EXTIRPATION THROUGH THE MOUTH.

BY DR. WALKER DOWNIE.

The first patient whom I desire to show you to-night is a woman, aged 58 years, from Alloa. I saw her on the 17th August, 1899, when she complained of a swelling of her right tonsil, which had been slowly increasing in size since the beginning of the present year.

Early in January she first had a sense of fulness and discomfort in her throat, particularly on swallowing. It came on without any apparent cause, and at first gave her no concern. She used gargles of borax, vinegar, and the like; but the discomfort persisted, so she consulted a doctor in March, who informed her that the tonsil was inflamed and ulcerated, and he prescribed an astringent solution, to be painted over the tonsil. The tonsil was at this time evidently enlarged, and she had some difficulty in swallowing. There was no sharp pain, and she was able to take both fluid and solid food freely. She continued to apply the astringent referred to till June. During these three months she not only felt no local improvement, but was convinced that the affected tonsil was slowly increasing in size; and also she felt that she was losing flesh, and becoming so weak generally that she was quite unable to perform her ordinary household duties.

In June she consulted another doctor, who proposed to excise the affected tonsil, but on her return two weeks later to have this done the tonsil was found to have increased so much in size in that interval that he deferred operation.

She called on me with a note from her doctor on 17th August, by which time there was no doubt as to the nature of this new growth.

Her temperature was normal. She appeared to be in moderately good health, though complaining of weakness and exhaustion on slight exertion. Her speech was somewhat

thick, and she complained of pains shooting up from the right side of the throat to the right ear. She could swallow with comparative ease.

On examination through the mouth, a tumour occupying the position of the right tonsil was seen, somewhat resembling a hypertrophied tonsil. It was barely the size of an average walnut, it had the form of an enlarged tonsil, and was of a deep red colour, with several greyish patches of superficial erosion distributed over its surface. It was firm to the touch, non-fluctuant, and palpation caused no pain. The faucial pillars were not adherent to the tumour, which was, as a consequence, freely movable, and the lymphatics in the neighbourhood were unaffected.

She was admitted to the infirmary with the least possible delay, and on the 23rd of August she was operated upon by me under chloroform.

The removal of the tumour was carried out through the widely opened mouth, and the growth was enucleated by the finger-nail and scissors. Firm pressure over the raw surface checked what bleeding there was. Ice was given frequently for the first few hours after operation, and thereafter small doses of dilute hydrochloric acid was administered several times daily until the parts were healed.

Swelling and ecchymosis of the faucial pillars on the right side followed the operation; but this rapidly subsided, and the patient was dismissed on 2nd September with the parts completely healed.

Dr. A. R. Ferguson, who cut and examined sections of the tumour, reported that the growth was a spindle-celled sarcoma. "The cells," he wrote, "are large, uninuclear, and spindle-shaped," and, in addition, "there are numerous very irregular large rounded cells. An infiltration of the remaining tonsillar tissue, with their cells, singly or in small groups, is also observed."

It is now two and a half months since the operation, and you will see that the parts are healed, that the contour of the fauces has been in no way altered—the two sides are symmetrical—there is no trace of the former growth nor of the operation performed for its removal; there is no recurrence, and the patient is in excellent health.

There were two reasons which prompted me to show this patient and the tumour. The first is to give a word of warning, and the second is to enable me to give a word of encouragement. The first, then, is to emphasise the fact that the tonsil not only may be, but is, the site of malignant



disease, and that more frequently than is usually supposed. I have on former occasions referred to other cases which I have seen, all of which had in the earlier stages been looked upon, and treated as, cases of simple subacute inflammation of the tonsil. And so long as the belief exists that the tonsil is seldom attacked by, and is still more rarely the starting-point of, malignant disease, will this mistake occur. In the case of sarcoma, new growth may closely resemble an inflamed hypertrophied tonsil, but with it there is less pain, and rarely any acute pain, which, on the other hand, is always present when the tonsil is inflamed. Then, sarcoma does not run the course of an acute or subacute tonsillitis, and end in resolution or suppuration; but it continues slowly to increase in size, and the patient's health the while becomes affected, as shown by lassitude, loss of flesh, and impairment of strength.

In two other cases, one of which I have already published, each was sent to me to have a supposed tonsillar abscess opened.

The second reason, which contains the word of encouragement, has regard to the nature of the new growth. The tumour in this case, as stated by Dr. Ferguson, was of the spindle-celled variety. This variety of tumour may, as pointed out by Dr. Newman in his book on *Malignant Diseases of the Throat and Nose*, remain encapsuled for a considerable period, and the glands remain unaffected. Thus, if the tumour is recognised while it is still encapsuled, and it be at once enucleated, there is every hope that that operation will effect a cure.

In the case before us to-night, the tumour appears to have been in existence for at least eight months; and even at the end of that long period it remained encapsuled and the lymphatics unaffected, a condition which permitted of its successful extirpation.

*Mr. Clark* was not unfamiliar with sarcoma of the tonsil. Some time ago he had removed one from a man, who lived for at least five years afterwards, and possibly for some years more, for he had quite lost sight of him.

## II.—CASE OF PRIMARY PEDUNCULATED SARCOMA OF THE TONGUE.

BY DR. WALKER DOWNIE.

Matthew C., a mechanic, aged 34, was referred to me by Dr. Gilmour, of Duntocher, and first seen by me on 17th

March, 1899, when he gave the following story of his illness:—

Five weeks ago his throat became sore; he felt feverish, and had considerable pain and some difficulty in swallowing. He supposed the discomfort to be the result of a "cold," and he made hot applications to his neck at intervals for one week. These gave him no relief, and, as he felt unfit for work, he consulted his doctor, who, while examining the throat, discovered the presence of a swelling over the posterior aspect of the tongue. A gargle was prescribed, and during the second week of illness the pain in the throat became less severe, and he could swallow more readily. At the end of the second week the swelling "burst," when a quantity of blood, and blood only, was discharged. A few days later, though still feeling ill and weak, he returned to work. Towards the end of the third week the swelling was larger, and appeared to fluctuate on palpation, and his doctor incised it. Free bleeding followed the incision, and the patient thought that the size of the swelling, of the presence of which he was now conscious, was lessened. Shortly after this, however, the throat again became inflamed and sore, and, while there was no interference with respiration, deglutition became almost impossible. Poultices were applied, and again the pain and difficulty in deglutition subsided, so that he could partake of even solids without discomfort. During those three weeks, however, he had been conscious of gradually increasing weakness and loss of flesh. One week before presenting himself at the hospital he had had a rigor, followed by profuse perspiration, which slowly passed away, leaving him, however, more enfeebled.

On 17th March, when first I saw him, he had no difficulty in swallowing, and he could breath freely. His voice was clear, but his speech was thick, and resembled that associated with hypertrophy of the faucial tonsils. He felt feeble, a short walk having exhausted him. His temperature was 98·8° F.; his pulse, 80; and he stated that during the past five weeks he had lost 2 stones in weight.

*Examination.*—With the mouth widely opened, and tongue on the floor of the mouth, the tumour had the appearance of a smooth swelling of the left side of the dorsum of the tongue, and it was the more readily noticeable as it was smooth and free from fur, while the surface of the tongue generally was thickly coated. When the tongue was protruded, the growth was caused to rise, and its full size and relationships could then be observed. It sprang from the



centre of the left half of what may best be described as the post-circumvallate area of the base of the tongue (that part of the base of the tongue situated behind the line of the circumvallate papillæ). The size of the tumour was considerably larger than a walnut, its surface was smooth and shining like the palate, and its colour was similar to that of the palate. There was a small protrusion or outgrowth on its upper aspect, marking, I think, the site of the incision referred to.

The tumour was firmly attached to the tongue, although the area of attachment appeared to be only about one-half of the circumference of the growth. It was thus pedunculated, and, as a consequence, it was freely movable in all directions. When the tongue was protruded, the tumour filled up the greater part of the faucial isthmus, and its upper border lay in contact with the soft palate; and when the tongue was withdrawn into the mouth, the bulk of the tumour fell back and lay in the glosso-epiglottic fossa. On palpation, the growth was found to be highly elastic, and near to its upper border the sensation conveyed so closely resembled that of fluctuation that, to eliminate any possibility of doubt, a fine trocar was introduced, through the cannula of which blood alone escaped.

There was absolutely no glandular enlargement, though there was a slight fullness below the angle of the jaw on the right side, due to a chronic hypertrophy of the right tonsil.

There was here, then, a large elastic tumour of rapid growth, with rapid systemic involvement, resulting in general prostration and serious emaciation, with absence of glandular implication, all of which pointed to sarcoma, and I resolved to excise the growth without delay.

On 22nd March the patient was placed under chloroform, the left cheek was split by an incision extending from the angle of the mouth to the edge of the masseter muscle. A stout ligature was passed through the tongue, by which that organ was drawn well forward; but even firm traction on this did not raise the growth into the mouth, so a second ligature was passed through the body of the growth, and by this means it was brought well into view and within reach.

The portion of the tongue from which it sprang was removed along with the growth, the cutting being done by means of scissors; and the incision, elliptical in form, included a wide margin of tongue tissue. No secondary nodules were found, and the cavity in the tongue was closed by numerous silkworm sutures. The incision through the cheek was closed

by a double row of sutures, the mucous surface with horse-hair, and the skin with silkworm gut. A cyanide iodoform dressing was applied externally; small pieces of ice were given to suck, and a boric acid mouth-wash used freely. On the following morning his temperature was  $101^{\circ}$  F. He indicated that he could not swallow, and he was given 20 oz. of peptonised milk through a stomach-tube. Later on in the day, while he was cleansing his mouth, he accidentally swallowed some of the boracic solution, and, as this had occurred without causing pain, his fears were allayed, and the tube was not again required. On the second morning after the operation the temperature was normal, and it remained so thereafter. On the fourth morning several stitches were removed from the cheek, this wound having healed by first intention; and three days later all remaining stitches, including those in the tongue, were removed.

On 31st March—that is, nine days after operation—the patient was sent to a convalescent home, from which he returned at the end of three weeks feeling very well, and having gained in that time  $14\frac{1}{2}$  lb. in weight.

He again reported himself on 23rd May. He was then the picture of health, felt exceptionally well, and had gained  $7\frac{1}{2}$  lb. since last report.

On 14th July he visited the hospital. He had been at work regularly since the date of last report, and there was no evidence of recurrence of the disease. He is now back to his normal weight—namely, a fraction over 10 st.

To-night, you will see that the scar in the cheek is almost imperceptible, and on examination of the tongue you will find a hollow in the left post-circumvallate area, marking the site from which the growth was removed. There is now (seven and a half months after operation) no local discomfort, and there are no evidences of recurrence of the disease. He has been regularly at work since May, he feels fit and well, and his weight, taken to-night, is 10 st. 2 lb.

The tumour after removal weighed 28 grammes; it measured 13 cm. in circumference, and 4.3 cm. from the surface of the tongue to its upper border. The surface of the growth was smooth, with two small outgrowths situated on its upper and posterior aspects, and on section the growth was seen to have a firm capsule.

*Microscopic examination of the growth.*—Under a low power there is seen a well-demarcated tumour, with a tolerably thick fibrous capsule, which at several points throws septa between the lobules of the growth. The capsule is well

defined as a whole, but at several points the growth can be seen invading it.

Under a high power the tumour consists of well-defined cells and matrix. The cells are irregularly disposed, in some parts being grouped together in dense masses, while in other parts they are sparsely distributed. The great majority of the cells are spindle-shaped, while of the rest some are round and others oval in form.

With the oil immersion lens the cells are shown to have no cell-wall; they are multinuclear, and present clearly the characters of new-formed cells of the embryonic type.

The matrix presents a delicate structure, in parts fibrillated, in parts reticulated, and in parts punctated. It is rich in vessels with very fine walls.

Contained within the capsule proper there is nothing other than what has been described—no adult fibrous nor muscular tissues.

The capsule, under the high power, presents throughout its thickness stratified connective tissue fibres showing the usual formative connective tissue cells. Invading the inner layer, here and there, can be found spindle-cells of an embryonic type, but these become less numerous as the outer layers of the capsule are reached.

The tissue outside of the capsule presents muscular tissue, separated by fibrous tissue, presenting formative connective tissue cells; but there seems to be no trace of cells of the embryonic connective tissue type.

From these appearances, the only conclusion which can be drawn is that we have here an encapsuled sarcoma of the spindle-celled or mixed-celled type, and that invasion of the capsule had commenced, but that it has not reached the tissues of the tongue.

Primary sarcoma of the tongue is rarely met with. In illustration of this fact, the following quotation, relative to this subject, from Butlin's clinical manual *On Diseases of the Tongue*, published in 1885, may be made. In this book the author makes mention of three cases, none of which he had seen, however, and says—"Even if these cases are admitted to have been true cases of sarcoma, it is still very evident that primary sarcoma of the tongue must be regarded as an exceedingly rare form of tumour, and equally certain that it is quite useless to attempt to write an account of it which shall be useful." Since that date other cases have been put on record, but I do not think the number exceeds thirty in all.

The neoplasm appears under two distinct forms—(a) the interstitial, which is the more common, and (b) the pendulous or pedunculated variety. Of the latter variety, of which the one I show to-night is an example, five cases only appear to have been put on record, and none of these occurred in this country.

Dr. Melchior-Robert, in the *Revue de Chirurgie* for April, 1899, gives particulars of a case of pedunculated sarcoma of the tongue, which is the fifth case of such in order of publication, and he contrasts it with the other four recorded cases. Some of the points in common in those cases of pedunculated sarcoma are:—

1 *Rapidity of growth.*—Of the five cases grouped in Melchoir-Robert's, in his own case, the tumour had been present about two and a half months prior to surgical interference; in another (Mikulicz), three months; in Perman's, four months; in Berger's, six months; and in one only, that recorded by Mercier, had the growth been present for some years. In the case I have described, the growth, as far as could be ascertained, had been present for five weeks only.

2 *State of the glands.*—Of the five recorded cases, in two only were the glands affected, and in both the enlargement was of a purely inflammatory nature. In my case the glands were unaffected.

3 *Non-recurrence.*—Recurrence after the removal of a pedunculated sarcoma of the tongue appears to be exceptional. In four of those five cases no recurrence had taken place after several years, and this, to me, appears the more astonishing, as the growth of the tumour is usually so rapid.

### III.—TWO CASES OF EPITHELIOMA OF THE TONSIL.

BY DR. JAS. GALBRAITH CONNAL.

CASE I.—Mr. M'L., æt. 61 years, is an ironmoulder to trade. Since May of the present year he has complained of pain in his throat. For this he tried simple remedies, but as he was not improving he consulted his medical attendant, Dr. John Ritchie, who diagnosed the condition as malignant, and asked me to see him.

The right tonsil presented an ulcerated surface, and there was a hard nodule, about the size of a pea, in the adjacent border of the soft palate. The gland at the angle of the jaw was involved. I removed a small piece of the tonsil, and sent it for examination to the West of Scotland Clinical Research



Laboratory, and their report stated that the section showed only inflammatory infiltration.

The patient had been asked to come back in a week, but it was nearly two months before he came. He explained that he had been confined to the house owing to an accident. It was noticed now that the ulceration of the tonsil was deeper, and he complained that latterly the pain was very severe.

As the clinical features of the case still indicated malignancy, I removed a larger piece of the tonsil, and again sent it for examination, and this time it was reported as epithelioma.

Shortly after this he entered the Western Infirmary, and Dr. J. H. Nicoll tied the common carotid artery on the right side. It will be interesting to watch if this limitation of the blood-supply to the tonsil will in any way retard its growth.

Regarding the patient's personal history, he states that he has always been a strong man, and that he has never had a day's illness in his life. There is no history of syphilis.

CASE II.—W. M'G., a man, 62 years of age, whom I saw at the Central Dispensary. An interesting point in his case is that he has a large nodular mass on the left side of the neck, which I regard as malignant, while the right tonsil, soft palate, alveolar border, and side of the tongue are extensively ulcerated. A small piece of tissue was removed from the tonsil, and microscopic examination showed typical epitheliomatous growth.

The swelling in the neck was first noticed about seven months ago, while the involvement of the tonsil dates from June of the present year.

Pain, shooting up to the ear, is, and has been, a prominent symptom, while emaciation and loss of strength are well marked. He is an old soldier, and was treated for primary syphilis while in the army about forty years ago.

Dr. Nicoll said that when Dr. Connal sent to him the first patient shown to-night he admitted him to the Western Infirmary, and there, as Dr. Connal had mentioned, ligatured the common carotid artery. This he did with a double purpose. In the event of no further operation being attempted, he hoped the limiting of the blood-supply might retard the malignant growth. In the event of further operation with a view to radical removal of the growth, the previous ligature would lessen the hæmorrhage. The patient ultimately decided that, as no guarantee could be given that removal would prove a complete cure, he should not undergo a radical operation.



In the *British Medical Journal* for 11th September, 1897, would be found a note on "The Collateral Circulation after Ligature of the Common Carotid," which he had communicated to that *Journal*. It had reference to a case of extensive epithelioma of tongue and fauces, in which Dr. Nicoll had first ligatured the common carotid, and, subsequently, ten days later, resected the fauces and tonsil of one side along with the entire tongue. At the latter operation the result of the former ligature was found to be that the common carotid above the ligature, with the external carotid and its branches, were firmly thrombosed, while the internal carotid (by way of the circle of Willis) was fluid and pulsating down to the carotid bifurcation. In another case since, he had had a similar result follow preliminary ligature of the common carotid.

*Mr. Clark* said that primary epithelioma of the tonsil was more frequent than generally believed; he had seen a good many cases. He would be interested to know the effect of ligature of the carotid, but it must be remembered that the growth might be slow even without ligature of vessels, as one of his cases showed, where, without ligature, there had been no extension in three years.

#### IV.—CASE OF COMPLETE TRAUMATIC ANIRIDIA, THE LENS BEING PRACTICALLY UNINJURED.

BY DR. JOHN ROWAN.

J. W., æt. 35, blacksmith, was admitted to the Ophthalmic Institution on 12th July last.

There was a history of his right eye having been struck on 7th July by a piece of steel, three-eighths of an inch square. This struck him so forcibly that he fell down, but the eyelids were not injured. He returned to work next day, though seeing almost nothing with this eye. On the 12th he received a second injury to this eye, a small piece of steel striking it.

On admission, the anterior chamber was seen to be full of blood, and he could only distinguish bright light and shade. There was also a small wound on the upper and inner part of the cornea. The condition gradually improved under treatment, till, on 4th August, R.V.  $\frac{4}{60}$ , and with + 2 D Sph. =  $\frac{6}{24}$ , a fairly clear view of the fundus could be obtained.

*Present condition* (3rd November, 1899).—The eye appears dark in colour, *i.e.*, there being no iris visible, it is all pupil. Vision with this eye =  $\frac{6}{24}$  and J. 8. The small scar is seen on the cornea, as well as the blood-stained opacity on the anterior capsule of the lens.

Ophthalmoscopic examination shows the torn roots of the iris, and the apparently dark margin of the lens, through which are scattered numerous small opacities, also, the so-called ligament of the lens. The fundus is clearly seen.

This case was demonstrated by means of a corneal microscope, kindly lent to the author by Dr. Ramsay.

#### V.—NOTES ON CLINICAL GYNÆCOLOGY.

BY DR. J. M. MUNRO KERR.

*CASE I.—Large suppurating cyst of right broad ligament in which the pedicle became twisted during woman's removal to Western Infirmary.*

Mrs. N., aged 35, was admitted to the Western Infirmary on 11th August, while I had charge of Professor Murdoch Cameron's ward.

She stated that she had three children, and that the last was born fully a year ago. After her last confinement she "fevered," and had to remain in bed for a considerable time. She had never been well from that date, she said, and three months ago she took to bed, and had been confined to it ever since. She frequently suffered from sickness and vomiting.

On admission she was quite collapsed, had a feeble, rapid pulse, and complained of a swelling in the lower part of the abdomen. The swelling, she thought, she had first noticed about three months prior to admission.

On examination of the abdomen, a large tumour, elastic to the touch, and about the size of the adult human head, could be felt, lying rather more to the right than the left side. By bimanual examination it seemed to arise from the right ovary. It was only slightly movable, and there was some tenderness over it and the abdomen generally.

The day after admission patient complained of severe pain over the tumour. She was also very sick, and vomited frequently. The two following days the pain continued, but was less severe, as also was the sickness.

On the fourth day after admission she was rather better, so I decided to open the abdomen. On doing so, I found a large cyst connected with the right broad ligament. I punctured it to allow of its collapsing, and so permit me removing it without extending the abdominal incision. In so doing, a small quantity of pus (the whole contents of the cyst were of pus) escaped into the abdominal cavity. The pus was sponged away as carefully as possible. The removal of the cyst after the evacuation of the contents presented no great difficulty.

The adhesions that had to be separated were loose, and of very recent origin. The pedicle was twisted two turns from right to left. Although the cyst was not acutely strangulated, it was markedly congested. The circulation had evidently only been partially interfered with by the torsion of the pedicle.

The abdomen was not washed out, and no drainage-tube was inserted.

The pus (90 oz.) removed from the cyst had no smell. Professor Muir very kindly made an examination of it, and found only streptococcus pyogenes present.

Several portions of the tumour were examined microscopically.

The conclusion come to was that the cyst was an old broad ligament one, which had become infected during the last puerperium. The ovary seemed quite healthy, and was flattened out on the cyst wall, and the tube could be followed throughout its whole length.

The woman died on the fifth day after the operation. Unfortunately no *post-mortem* examination was allowed.

The manner in which this woman died was very striking. During the days preceding her death there was absolutely no tenderness or distension of the abdomen, the temperature was never higher than  $99.8^{\circ}$ , and usually much below that figure, except on one occasion, when it registered  $100.2^{\circ}$ . The tongue was always moist and fairly clean, and she persisted in saying up to the end how exceptionally well she felt. The only indications of a probable fatal termination occurring were given by the pulse, which, on the third day, ran up from 95 to 116, and by the exaggerated feeling of well-being.

I have several times seen cases of very severe and fatal sepsis after abdominal section, and during the puerperium, where there was very little rise of temperature, very little tenderness or distension of the abdomen, but never one—I consider this patient died of sepsis—in which there was such entire absence of all local symptoms.

The pulse here early gave an indication of the seriousness of the condition. It is always so. The pulse is an infinitely more valuable guide to the condition of a patient after operation, or during the puerperium, than the temperature. The feeling of well-being was very striking. It, with the rising pulse on the third day, led me at that time even to entertain very little hope of the patient's recovery.

The twisting of the pedicle must, I think, have occurred during the patient's removal to the infirmary, as the adhesions were very loose and of quite recent origin.

Before the operation, I mentioned to some students who were present that we might possibly find the pedicle twisted, but, on the whole, I was inclined to think that the localised peritonitis was from infection of the peritoneum by some of the cyst contents. I came to this conclusion because the patient had been suffering much pain from time to time in the abdomen, and sickness for months, before her admission to the infirmary.

I think the history clearly points to the infection of the cyst having occurred during the last puerperium, for, as she said, she fevered then, and had never been well from that time.

CASE II.—*Cyst of right ovary—Infantile uterus—Ovulation without menstruation.*

Miss A. S., æt. 23, was sent to me by her medical attendant, Dr. Prentice, of Kilmarnock, in the beginning of the present year. He informed me by letter that the uterus was very small, and that there was a swelling to its right side. On examining the patient, I confirmed his diagnosis. I found the uterine cavity measured only  $1\frac{1}{2}$  inch in length, and that there was a sausage-shaped swelling at the upper part of the right broad ligament. I could feel no ovary in the right side, but made out the left one quite distinctly. I found the woman well developed, both mentally and physically; the breasts were well formed, and hair was present both in axilla and over mons veneris, and altogether she looked the picture of health. Briefly, her story was as follows:—

From the age of 16, at regular intervals, she suffered from most severe pain in the lower part of the abdomen. This pain lasted usually two days, and was so severe that it prevented her from attending to her household and other duties, and frequently necessitated her taking to bed. Along with these severe attacks of pain, there were always the feelings of general discomfort that are commonly the accompaniment of menstruation. *She stated, however, that she had never once menstruated.*

Tonics and sedatives were recommended and tried, but had no effect. No attempt was made to make the uterus menstruate, either by emenagogues, electricity, or stem pessaries, &c.; the uterus was too imperfectly developed for that. I agree with Herman when he says, in his most excellent text-book on gynæcology, "I advise against any attempt to make an imperfectly developed uterus menstruate."

About three months ago the patient returned to see me,



and informed me that the pain was nearly unbearable, and that she could not stand it any longer. I examined her again, and found the pelvic organs in the condition I have already described. I advised that the cyst and other ovary be removed. This was done with no great difficulty. The right ovary, which I pass round, was cystic. The left had one or two distended follicles on its surface. I examined it microscopically, and found Graafian follicles in various stages of development.

The woman made an excellent recovery, and her doctor informs me that she has had no pain since the operation.

The interest attaching to this case is the fact of this patient having had periodic congestions of the pelvic organs, and, presumably, ovulation, and yet having never menstruated. It seems that for menstruation to occur, not only must the ovaries be present and the cyclical periods of congestion, but there must also be a well-developed uterus.

Reading the other day Hirst's *Text-book of Obstetrics*, published a few months ago, I found, on p. 64, reference to a case exactly similar to the one I have related. Hirst says—"Finally, I was once obliged to remove the ovaries in a case of ill-developed infantile womb, associated with well-developed ovaries, in which there was a violent exaggeration of the menstrual molimen every month, without a discharge of blood, and the consequent relief of menstrual congestion. The ovaries were found, after their removal, to be filled with well-developed Graafian follicles and numerous depressions, representing corpora lutea. In one of these ovaries there was a corpus luteum that would have answered for an illustration of the yellow body of pregnancy."

CASE III.—*A large myoma of uterus, with adhesions, removed by enucleation.*

J. N., æt. 35, single, asylum attendant, was sent to the Western Infirmary by her medical adviser, Dr. Todd, Maryhill, while I was acting for Professor Cameron there in August last. She was admitted on the 18th, complaining of a large abdominal swelling and of great pain in the lower part of the abdomen, which was always specially severe after eating or taking any purgative medicine. She stated that she had altered regularly since she was 14 years of age, and that, in addition to pain at the times mentioned, it was always very severe during the week preceding a menstrual period.

An examination was made, and the diagnosis of her doctor,



that the tumour was a fibromyoma of the uterus, was confirmed.

On more careful examination under chloroform, the large hard swelling, which I pass round, was felt. It occupied the middle line of the abdomen, and had a slight depression on its upper surface. It was connected with the uterus at the fundus, but not very extensively. The tumour seemed to be freely movable. The uterine cavity was not appreciably enlarged. The diagnosis of a pedunculated subserous fibromyoma was made, and an operation recommended.

Two or three days later I removed the tumour. This was accomplished, however, with the greatest possible difficulty. Instead of being freely movable in the abdominal cavity, as I thought, the tumour was attached by strong adhesions to the abdominal wall; indeed, it was part and parcel of the wall, and seemed to derive its blood-supply from there rather than through its connection with the uterus. It was also closely adherent to the transverse colon and mesocolon.

I first separated the tumour from the abdominal wall, then enucleated it from the uterus, and, finally, detached it from its connection with the bowel. The bleeding was dreadful. The woman became absolutely collapsed, and all present expected she would die on the table. As quickly as possible I ligatured all bleeding points after detaching each part, stitched the uterine wound, and brought the raw surfaces of the mesocolon and colon together and stitched them. As far as I could judge, all bleeding was arrested. I put in a drainage-tube, however, so that I might see if any bleeding occurred after the patient recovered from the shock. Finally, I stitched up the abdominal wound in one layer, applied the dressings and bandages, and injected two pints of saline solution into the submammary tissue, and put the patient to bed. She recovered consciousness soon, and seemed very well, but about six hours after the operation blood began to escape from the tube, and the pulse got weaker. I therefore reopened the abdomen, found two bleeding points on the abdominal wall, and some oozing from the intestinal surface; none, however, from the uterine wound. I got all the bleeding stopped again by ligatures, closed up the abdomen, but did not introduce a drainage-tube. I then bound up the patient very tightly, and again injected some saline solution.

I need not trouble you with the after-history of this patient, suffice it to say that she made a most uneventful recovery.

This case is one of great interest in many respects. The

extensive adhesions and large quantity of ascitic fluid are conditions found very rarely accompanying myomata of the uterus. As I have said, the connection with the abdominal wall was so intimate that the tumour seemed to derive its blood-supply from there, rather than through the uterus. Doubtless the tumour was more mobile because of the ascitic fluid present.

Of special interest in connection with the adhesions was the pain complained of by the patient after taking food or purgative medicine, for, no doubt, these discomforts were caused by the tumour being adherent to the transverse colon.

As regards the wisdom of using a drainage-tube for the purpose of indicating the occurrence of hæmorrhage I am very doubtful, for with a drainage-tube in the abdomen one cannot bandage up a patient so tightly as one can when there is none.

In reply to Dr. Nicoll, *Dr. Kerr* explained that the hæmorrhage in Case III was chiefly from the abdominal wall, and that he sutured the colon with fine, and the uterus with coarser, silk.

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#### MEETING IV.—17TH NOVEMBER, 1899.

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*The President, MR. H. E. CLARK, in the Chair.*

#### I.—CASE OF LEUCOCYTHÆMIA (SPLENO-MEDULLARY FORM).

By PROFESSOR M'CALL ANDERSON.

The patient was a married woman, aged 30, who was admitted under Professor Anderson's care on 22nd October, complaining of a swelling in the abdomen of a year's duration. She had five children, all living and healthy. Her mother still survived in good health, but her father had died of some chest affection. Patient suffered from scarlet fever in infancy. After the birth of her last child, two years ago, she was confined to bed for six weeks owing to pain about the left side, where the swelling now is. This pain eventually disappeared, and she regained her usual health, but menstruation has not occurred since.

She became aware about a year ago of a gradually

increasing swelling in the left side of the abdomen. She thought she had lost colour, and she had sometimes had palpitation at night. She thought she was pregnant. Digestion had been good, though the bowels were constipated. There had been no epistaxis, or deafness, or enlargement of glands. Patient had never noticed any swelling of the legs. She complained of a burning sensation on micturition, and the urine had been dark in colour. The urine on admission was acid in reaction, with a specific gravity of 1020; it contained a trace of albumen, but no sugar. A few minute hæmorrhages were present in the retina, and especially in that of the left eye. The hepatic dulness measured 5 inches.

Points of special importance in the diagnosis were the weakness, emaciation, and anæmia; the enormous splenic enlargement; the absence of any enlargement of lymphatic glands; the retinal hæmorrhages; and the results of the examination of the blood.

The treatment had included rest and the administration of bone-marrow, and afterwards of spleen tabloids.

*Dr. Alex. Robertson* referred to cases where the treatment had consisted of the administration of arsenic and bone-marrow, and to two others where the spleen had been excised. In none of these had the methods of treatment proved encouraging.

*Mr. Clark* said that the question of operation for removal of the spleen should be determined by the nature of the disease. If the spleen only were involved, it might be excised; but if other organs were implicated, no operation should be undertaken.

*Dr. W. K. Hunter* said he had examined the blood of a similar case some two years ago, and had found numerous micro-organisms in all the specimens examined. He had, however, not succeeded in obtaining a growth on any of the ordinary culture media. Possibly the organisms were saprophytic, and had no causal relationship to the disease.

*Professor Anderson* replied.

## II.—PATIENT SUFFERING FROM DISEASE OF THE SPINAL CORD.

BY PROFESSOR M'CALL ANDERSON.

Professor Anderson showed a patient who had been admitted to his wards some weeks before suffering with

ataxic symptoms, and who had made a rapid recovery under treatment with large doses of iodide of potassium.

*Dr. Robert Kennedy* said he had seen a similar case a year ago, where, in a short time, the ataxic symptoms had disappeared under 5-grain doses of iodide of potassium.

### III.—CASE ILLUSTRATIVE OF THE VALUE OF THE EYE SYMPTOMS IN THE DIAGNOSIS OF TABES IN THE PRE-ATAXIC STAGE.

BY DR. JAMES HINSHELWOOD.

The diagnosis of locomotor ataxia is easy when the characteristic ataxic gait has manifested itself. Frequently, however, the diagnosis can be made with perfect certainty before the slightest ataxia is present, if the other symptoms are correctly observed and interpreted. The eye symptoms are of very special importance from this point of view, as they occur in a large percentage of cases at a very early stage of the disease. Not infrequently they are the very first symptoms which obtrude themselves on the notice of the patients, and make them consult the ophthalmologist. Hence, in the Eye Infirmary, we frequently have opportunities of seeing cases of tabes at the very earliest stage of the disease, before any obtrusive spinal symptoms have developed, such as would send the patient to consult a physician.

The following case is an admirable illustration of the very early occurrence of eye symptoms, and of their importance in the diagnosis of locomotor ataxia:—

W. C., æt. 45 years, a labourer, presented himself at the Charlotte Street branch of the Eye Infirmary on 3rd June, 1899, complaining of double vision. On examination, the diplopia was found to be due to paralysis of the third cranial nerve, all its branches being involved. There was therefore ptosis, external strabismus, and a dilated immobile pupil. Knowing from experience the frequency with which paralysis of the ocular muscles occurs in the early stage of tabes, I, as a matter of routine, always test the pupillary reflexes. I found that the Argyll Robertson pupillary phenomena were present. I found, also, the absence of Westphal's pupil phenomena, the new symptom which has recently been described by him. When the patient attempts forcibly to close the lids, which are held open by the observer, in health the forcible effort to shut the lid is accompanied by a narrowing of the pupil. In



tabes it is found that this contraction of the pupil does not occur. Westphal has found this pupillary phenomenon also absent in other conditions than tabes, such as general paralysis and syphilis of the central nervous system. Though not pathognomonic, it is a valuable confirmatory sign in the presence of other symptoms of tabes. On examination with the ophthalmoscope, there was found a well-marked optic atrophy in both eyes; and on perimetric examination, a characteristic concentric contraction of both visual fields was found to be present.

The eye symptoms alone, therefore, led to the diagnosis of locomotor ataxia. The ocular palsy, the Argyll Robertson pupillary phenomena, the absence of Westphal's new pupil phenomenon, the optic atrophy, and the concentric contraction of the visual fields, formed a collocation of eye symptoms such as pointed in the most definite manner to locomotor ataxia.

On examination of his knee-jerks, these were found to be present, and on the most careful examination no ataxia could be made out. We know that the eye symptoms may be fully developed before any spinal symptoms manifest themselves, but in this case there were present shooting pains in the lower limbs of nearly a year's duration, which no doubt were the earliest symptoms of the involvement of the spinal cord. These had been regarded and treated as rheumatic, as is usually the case. There was a history of a chancre twenty years ago, but no history of subsequent symptoms.

The patient was put upon specific treatment, which, however, was only carried out in a somewhat spasmodic and irregular manner.

There was a rapid improvement of the paralysis of the third nerve, and by 20th September all traces of it had disappeared. I did not, however, attach too much importance to its disappearance, as we know that the ocular palsies in the early stage of tabes are often of a transient character, and disappear without any treatment whatever.

When the patient was examined at the beginning of November, it was found that the knee-jerks were entirely lost. No ataxia, however, could yet be made out. The complete loss of the knee-jerks confirms, in the strongest manner, the diagnosis which had already been made, six months before, from consideration of the eye symptoms alone.

In February, 1896, I demonstrated before the Medico-Chirurgical Society a case of tabes, with characteristic eye



symptoms and without ataxia, but with the knee-jerks completely lost. I have seen at the Eye Infirmary many such cases, as characteristic eye symptoms are very frequent in the pre-ataxic stage; but in the present case the patient was seen at a still earlier stage, before the knee-jerks were affected. The only symptom pointing to involvement of the cord, when first seen, was the darting pains in the legs, the subsequent development of the loss of the knee-jerks amply confirming the accuracy of the diagnosis. This case, and the one shown by me three years ago, fully illustrate the value of the eye symptoms in the early diagnosis of this condition.

It is evident that an early diagnosis, before extensive changes have taken place in the cord, will afford a more favourable opportunity of influencing the progress of the disease by treatment. This, I think, is of special importance in cases with a syphilitic history, where there is reasonable hope of effecting something by energetic treatment if the disease is diagnosed at a sufficiently early stage.

In the present case the disease has evidently progressed in spite of the treatment. This, however, does not invalidate what has just been said, as, in the first place, the treatment has not been carried out with regularity and thoroughness owing to the carelessness of the patient; and, in the second place, it is by no means certain that it is of syphilitic origin, there being a history of a sore on the penis, but of no further symptoms.

#### IV.—CASE OF EPITHELIOMA OF THE ŒSOPHAGUS INVOLVING THE PNEUMOGASTRIC NERVE WITH ITS RECURRENT BRANCH ON THE RIGHT SIDE, AND WHERE THE SYMPTOMS CLOSELY POINTED TO ANEURYSM OF THE ARCH OF THE AORTA.

By DR. J. SOUTTAR M'KENDRICK.

With the kind permission of Sir William T. Gairdner, in whose wards the following case occurred, while I acted as his house-physician, I have the privilege of bringing before the Society notes of a case where the symptoms (although not exclusively) pointed to aneurysm of the aorta, but which ultimately (*post-mortem*) were found to depend upon an extensive epithelioma of the œsophagus.

Although the symptoms resulting from epithelioma of the œsophagus are, as a rule, pathognomonic of the disease, this is by no means the only case where such a difficulty has arisen, and where the symptoms of the one have been almost identical

with those of the other. Dr. Newman,<sup>1</sup> for example, quotes a case of epithelioma of the œsophagus at the level of the bifurcation of the trachea, wherein the symptoms bore a close resemblance to a case of aneurysm of the transverse and descending portions of the arch of the aorta, while literature teems with instances where the symptoms, themselves suggestive of aneurysmal disease, depended upon an œsophageal origin. In this connection, Sir William T. Gairdner, in his recent article on "Aneurysm of the Arch of the Aorta," in Dr. Clifford Allbutt's *System of Medicine*, when speaking of the difficulty of arriving at an absolute diagnosis of aneurysm, says "that the whole of the symptoms present may be those of stricture of the œsophagus, and instruments may be employed with disastrous results."

As a rule, however, the difficulty of diagnosis in diseases at the upper part of the thorax is between aneurysm and mediastinal tumours of a carcinomatous or sarcomatous nature, and here, too, it is often only after a careful perusal of all the facts presented to us, and after a minute physical examination of the part under observation, that anything like an accurate diagnosis can be reached.

The symptoms and signs that are almost pathognomonic of aneurysm may be absent even in presence of aneurysm, or may be present when no aneurysm exists. Pain may be present or absent. Cough may be only slight, even when a large aneurysm exists, and may be extremely marked with a small aneurysm. The laryngeal nerves may be unaffected even in presence of an extensive thoracic aneurysm, although this is rare, whereas laryngeal paralysis in other cases may be one of the first symptoms. There may be excessive spasm and stridor from slight pressure on a bronchus, or there may be almost complete occlusion of a bronchus, with no evidence of spasm or laryngeal paralysis.<sup>2</sup>

Hæmorrhage may be one of the first symptoms, even in small aneurysms, whereas, again, in some cases there may be extensive dilatation of the aorta, with no hæmorrhage, until, perhaps, the final gush of blood indicates perforation into the trachea or bronchial tubes, or, again, there may be in such cases no hæmorrhage at all, the patient dying from sheer exhaustion.

Dysphagia may be a severe symptom from the outset, especially if the aneurysm affect chiefly the transverse part of

<sup>1</sup> Newman, *Malignant Diseases of the Throat and Nose*.

<sup>2</sup> Western Infirmary Pathological Reports, No. 5,381.

the arch of the aorta, where pressure is necessarily directed from above downwards on the œsophagus. As a rule, however, it is a symptom of minor importance, the slight dysphagia resulting probably from pressure on the pneumogastric nerve and its branches (œsophageal).

Again, in making a physical examination, we may find that many symptoms, indeed, most, may be absent in aneurysm of the arch of the aorta. Stokes<sup>1</sup> tells us from his experience that "the absence of localised dulness on percussion should not make us conclude against the existence of an intra-thoracic tumour." There may be pulsation, but this is not necessarily aneurysmal. There may be no expansile pulsation even with aneurysm. There may be differences in the pupils and radial pulses, engorgement of the veins of the neck, it may be only on one side, but these symptoms are not necessarily aneurysmal, while, again, in many cases of extensive aneurysmal disease of the arch there may be no apparent difference in the pulse and pupil of the two sides.

There need not be œdema of face, neck, or thorax, and the "tippet-like" neck of Stokes may be absent.

Although the sounds of the heart may be increased over the suspected aneurysmal site, in some cases there may be only little change. There need be no murmur; in fact, the presence of murmur is considered to be the exception. There may be a deficiency in the respiratory murmur, but this may depend on any intrathoracic pressure. Even with this deficiency there need be no "stridor from below," and, as in the instance above recorded, there may be almost complete blocking of a bronchus with no stridor or paroxysmal dyspnœa.

There may be stridor without aphonia, and, though less commonly, aphonia without stridor.

Of course, when a group of these symptoms occur together, and when inquiry is made into the history of the patient—the sex and occupation, the condition of the vessels and heart—the difficulty of diagnosis is considerably lessened.

One can see at a glance how difficulties in diagnosis arise. The symptoms depend on pressure exerted on the numerous structures crowded together at the root of the neck by a new growth. This new growth may grow rapidly or slowly; it may grow downwards, upwards, backwards, forwards, or to either side; it may push aside structures, or it may obstruct them; the structures which yield may escape, while those that are bound down or fixed are eaten away or occluded.

<sup>1</sup> Stokes, *Diseases of the Heart*, p. 537.

Tumours behave in different ways, and it is on this account mostly that the diagnosis of aneurysm can be arrived at, for the symptoms usually follow a particular march.

While an epithelioma of the Œsophagus, as a rule, introduces a particular train of symptoms, yet we can see here also how such a tumour may involve all the important structures at the root of the neck, especially if the tumour be situated at the level of the bifurcation of the trachea.

It is for this reason that the following case is of interest, the more so as the right recurrent laryngeal nerve was involved in the growth, causing *paresis of the muscles of the right vocal cord*.

Dr. Newman looks upon paralysis of the left vocal cord as almost pathognomonic of aneurysmal disease, and he says, "for practical purposes, aneurysm may be looked upon as the cause of paralysis in 19 out of 20 cases."

Dr. Morell Mackenzie does not go so far, for he mentions that out of one hundred cases of cancer of the Œsophagus, he observed that the left recurrent laryngeal nerve was involved in nine instances; the right in one; while in one case he noticed that both recurrent nerves were affected. In fact, in his definition of the symptoms that are characteristic of cancer of the Œsophagus, he says that there may be "progressive dysphagia, expiration of a fluid at first frothy but afterwards thick, muco-purulent, and sometimes tinged with blood; obstruction to the passage of a bougie, *frequent paralysis of abductors of the vocal cords*, with progressive emaciation and debility occurring in a person over 40 years of age."<sup>1</sup>

A most interesting case in this connection was described by Dr. Finlayson and Dr. Coats.<sup>2</sup> It was a case of cancer of the Œsophagus involving the left recurrent laryngeal nerve, and the body of the last dorsal vertebra by a secondary growth. This article was followed up with a note by Dr. Macintyre on paralysis of the vocal cords from malignant disease. He gives a short bibliographical sketch of paralysis of the vocal cords in cancer of the Œsophagus, with the result that such men as Mackenzie, Sajous, Ziemssen, and Lennox Browne have not infrequently found the recurrent laryngeal nerve involved in an epithelioma of the Œsophagus.

Although, then, aneurysm of the arch of the aorta is the frequent cause of paralysis of the abductor muscles of the vocal cords, it is not the only cause, as mediastinal tumours,

<sup>1</sup> *Diseases of Throat and Nose*, vol. ii, p. 92.

<sup>2</sup> *Glasgow Medical Journal*, September, 1890.



and certain tumours of the neck, may surround the nerve or press upon it, so as to produce a similar paralysis of these muscles.

The case was that of a woman, Mrs. R., aged 68, who was admitted into the Western Infirmary on 2nd June, 1897, with symptoms of dyspnoea, stridor, cough, and partial aphonia.

The following notes were received from her private doctor:—

In the first, he says that the patient was sent into the Helensburgh Infirmary last January for treatment of ulcer of the leg. While there a swelling was discovered in the neck, described as being the size of a duck's egg. He was of opinion that it was aneurysmal, and potassium iodide was given with good results, so that patient left hospital three weeks afterwards, and with slight subsidence of the swelling. Before he saw her again, which was about one month afterwards, she had a severe bout of coughing, and ejected three-quarters of a cupful of blood, which corresponded with an almost complete subsidence of the swelling in the neck. She has recently been troubled with dysphagia, he writes, and attempts to swallow frequently cause fits of coughing. She is of opinion that her symptoms have been aggravated by personal worry during the last few weeks.

In the second letter, he describes the tumour as like a duck's egg, the one half projecting above the general surface. He says—"The undoubted fact is that there was a pulsating tumour of about this size, which afterwards so diminished in size as almost to disappear, and it was only after careful examination that I excluded thyroid enlargement as the cause of the swelling."

As well as these facts, many other details were presented to us by the patient herself. She feels sure that she noticed a swelling in the neck almost two years ago, situated above the right clavicle, and midway between it and the trachea. It had recently grown much larger, and then subsided again with the coughing up of the blood. The swelling was painless, and never caused any redness of the skin. Breathlessness commenced in February, 1897, and a few weeks later she complained of hoarseness of the voice. Cough developed, which was of a severely paroxysmal type, occurring frequently at night, and lasting for upwards of an hour at a time. She coughed up three-quarters of a cupful of dark, thick blood in the third week of March, 1897, and this she attributes to the bursting of a swelling which was in the right side of the



neck, for after the gush of blood the swelling was reduced and the cough became easier. She spat up a little more blood in the middle of April, after which the swelling entirely disappeared.

For some months she has had difficulty in taking food, with a sense of contraction in the throat. Food frequently sticks in her throat, and she has been forced to take fluids lately.

She has now great difficulty in swallowing. Cough is very troublesome, and with it there is an abundant muco-purulent spit. She has lost flesh considerably during the last few months, and she feels very weak.

*Previous health.*—She has always been a healthy woman up to the onset of her present illness, except that when young she suffered from anæmia with palpitation. No history of rheumatism.

*Habits.*—She has never been addicted to alcohol, nor accustomed to any laborious work. She has never had any form of venereal disease. She had eleven normal pregnancies, all her children doing her credit.

*Family history* is not noteworthy.

*Present condition.*—Patient is emaciated and anæmic, but with no distinctly cachectic appearance. The skin generally is flabby and loose. The muscles are soft. The pupils are moderately dilated, equal, and respond correctly to light and visual distance. The tongue is slightly furred. The veins on the right side of the neck are prominent and varicose, but there is no œdema of neck, thorax, or of the legs. The radial arteries are unduly thickened and irregular to the feel; and this is so also of the superficial arteries, more especially of the thyroid axis and femoral branches. The pulses are equal on the two sides, the sphygmographic tracings showing that there is no marked difference between them, but that they are both of low tension. Pulse-rate is 86 per minute; temperature is 99.2° F.; respirations are 28 per minute. Breathing is laboured, and, in a note by Sir William T. Gairdner, "the noise in inspiration, as well as in expiration, and the affection of the voice, taken in conjunction with the other facts, are strongly suggestive of pressure on the trachea; while the imperfection of the cough, as regards closure of the glottis, together with very manifest vocal alterations, which, she says, sometimes went the length of complete aphonia, seem to indicate pressure on one or other laryngeal nerve." Breathing is not relieved by any special posture. Pressure over the trachea causes some pain. There is visible pulsation

of both carotids and in the suprasternal notch, and "distinct dilatation of the vessels at the root of the neck." To the outer side of the lower insertion of the sternomastoid muscle there is a pulsatile swelling, apparently due to the dilatation of the innominate and right subscapular trunks. This pulsatile swelling is about the size of an almond, and is not expansile.

*Heart and vessels*.—Physical examination of the heart and deep vessels reveals nothing abnormal. There is a "little undue impulse with the first sound near the right sternoclavicular articulation, and a little—scarcely perceptible—strengthening of the second sound."

*Lungs*.—There is nothing noteworthy in the examination of either lung, except that over the right interscapular region the respiratory murmur is somewhat hollow in tone.

*Abdomen*.—Hepatic dulness is normal to percussion. The kidneys are not palpable.

*Urine*.—Specific gravity, 1019; acid reaction; amber colour, with distinct albumen, but with no sugar, blood, or tube-casts.

*Larynx*.—The following is a note by Dr. Walker Downie:—

"On examination of the throat to-day, there is found to be marked œdema of the left aryepiglottic fold, most prominent over the left arytenoid cartilage. The left vocal cord is fixed, somewhat outside the line of complete adduction. The movements of the right vocal cord are imperfect, this being particularly noticeable during deep inspiration. There is no abrasion of the tracheal wall noticeable, nor is there bulging, such as from pressure, detected."

Such, then, was the history of the case. She only lived for four weeks after her admission into hospital, but during that time notes were taken on the progress of the case.

She had an abundant muco-purulent catarrhal expectoration, with no trace of blood in it, except during the last two or three days of her life, when it was blood-tinged. Tubercle bacilli were never present, and the sputum had none of the appearances of a phthisical expectoration. Stridor and dyspnœa became very marked, but it was never of the highly paroxysmal or suffocative nature. Dysphagia was very marked towards the close of life, so that fluids even had to be abandoned, and nutrient enemata substituted.

Pain in the chest was never present. The swelling in the neck never returned to any size corresponding to that given in the history. No new symptoms developed suggesting the

presence or absence of aneurysm, except that the cough became more imperfect, with somewhat of the brassy or clanging nature described by some writers. (Dr. Wyllie, of Edinburgh, giving it the name of the "bovine cough.")

About a week before her death she had a sudden feeling of faintness and sinking, accompanied by coldness and numbness of the extremities.

The urine averaged, since admission, only 30 oz. in the day, and frequently contained distinct albumen. The temperatures all along tended to pyrexia, reaching, as a rule, 100° F. at night, but subsiding somewhat in the morning.

Patient died from dyspnoea and general weakness. Prior to death there was no sudden onset of symptoms such as might have been expected from hæmorrhage into the pericardium or respiratory tubes, and no change in the physical conditions of the heart and lungs as far as could be examined.

The following is a summary of the *post-mortem* appearances:—

There is slight prominence in the right supraclavicular region, and projecting above the right clavicle at its inner third is a portion of an ovoid, firm, white tumour, evidently glandular. In the deeper part of the neck in the left side, lying on the transverse process of the third cervical vertebra, is a small ovoid tumour, apparently glandular, almost 2 cm. in diameter. This projects in the mucous membrane of the pharynx.

Small cretaceous nodules are scattered throughout the spleen, while the kidneys show evidences of cirrhosis with small cysts. The adrenals, pancreas, stomach, and intestines are normal. The abdominal arteries are markedly atheromatous. Nothing specially noteworthy in condition of pelvic organs.

The lungs are loosely adherent by fibrous tissue to the chest wall. In the left apex are seen tolerably large cavities filled with caseous and cretaceous material. The lung is emphysematous at its margins. The upper lobe of the right lung shows numerous old tubercular lesions, more than in the left. The bronchial glands are not involved. No secondary tumours are found.

The heart is enlarged, and weighs 385 grs., chiefly owing to hypertrophy of the left ventricle, the wall of which attains a thickness of 2.5 cm. The valves are competent. The aortic cusps, first part of the aorta, and anterior segment of the

mitral, show atheroma. This is also present around the orifices of the coronary arteries themselves.

"There is a very extensive growth involving the upper part of the œsophagus. It may be traced from a point about 5 mm. beneath the interarytenoid membrane downwards for a distance of 11 cm. At its upper end it may be traced into the pyramidal fossa, and seems to have invaded the tissue at the posterior part of the larynx.

"The growth has the form of an irregularly outlined sloughing ulcer. Its upper limits are fairly well defined. Its lower limits are less distinctly made out. At the growing edge, especially at the upper part, there are secondary implantations of tumour tissue, involving the muscular wall. Within the irregular edge there is a quantity of shreddy, very friable, tumour tissue, which tends to form polypoid masses, which project into the calibre. One of these masses, 7 cm. by 2·3 cm., is attached to the right edge of the ulcer in its anterior wall. Centrally there is considerable destruction of the œsophageal wall. On the right side the pneumogastric nerve may be traced downwards till it loses itself in the growth mentioned above the clavicle. On the left side the pneumogastric nerve courses free of the growth in its whole extent."

It is unfortunate that no fuller statements were made concerning the recurrent laryngeal nerves, but, certainly, the opinion that those who were present at the *post-mortem* took away with them was that the right pneumogastric nerve and its recurrent laryngeal branch was involved in the more superficial secondary glandular mass, while the left recurrent laryngeal nerve was involved in the deeper glandular mass, which was in continuity with the œsophageal tumour.

In conclusion, I should like to make a few remarks on the diagnosis of this case.

In the first place, the history, so emphatically stated both by the patient and by her doctor, of a swelling about the size of a duck's egg, which rapidly disappeared on the coughing up of a quantity of blood, clearly pointed to an aneurysm of the arch or of its large branches.

It is extremely difficult to interpret the nature of this swelling. It might conceivably have been due to the glandular mass, which lay superficially over the large vessels, suddenly altering its position owing to want of support from the tumour tissue below, this want of support being due to a rupture of one of the larger vessels on the surface of the epithelioma, or



the sloughing of a portion of the tumour tissue. It might have been due, again, to venous congestion, more especially of the thyroid veins of the right side, causing enlargement of the right lobe of the thyroid gland, the sudden change in its size resulting from the relief of pressure on the veins owing to the want of support from below.

Aneurysm was also specially indicated by the involvement of the laryngeal nerves. (The right, certainly, was involved, and, I believe, the left too, although the œdematous state of the left vocal cord was quite sufficient to account for its immobility.)

There was also marked atheroma of the larger and smaller vessels, with distinct dilatation of the large vessels at the root of the neck, and pulsation in the suprasternal notch. The stridor, cough, and paroxysmal dyspnœa were alike suggestive, and the accentuation of the first and second sounds of the heart over the second right intercostal space made one closely suspect aneurysmal disease.

As against this, however, there were certain symptoms which were extremely suggestive of obstruction in the œsophagus by a malignant tumour. There was pretty marked dysphagia at an early period, pain in swallowing, clear spit, which after a time became muco-purulent and abundant, and was rarely tinged with blood. Swallowing increased the liability to cough, and produced dyspnœa. There was marked emaciation, although not so great as in cases recorded where the patient has lost 5 to 6 stones in almost the same number of weeks. There was the "dreadful sense of faintness," with cold extremities, and death occurred from exhaustion.

Dr. Morell Mackenzie tells us that out of his 100 cases, death occurred from exhaustion in 78 instances.

There was no deviation of the trachea, or tracheal tugging; no change in the pupils or pulses of the two sides; no œdema of neck, face, or thorax; no prominence in upper part of chest, nor heaving impulse; no marked alteration in the character of the sounds in the upper sternal region; and no distinct difference in the quality and quantity of the respiratory murmur on either side of the chest.

Had an œsophageal bougie been passed, the question of diagnosis would have been cleared up; but were we justified in adopting such a procedure in this case?



## MEETING V.—1ST DECEMBER, 1899.

*The President, MR. H. E. CLARK, in the Chair.*

## I.—CASE OF MYOCLONUS MULTIPLEX.

BY DR. GEO. S. MIDDLETON.

John W., æt. 28, labourer, was admitted on 14th October, 1899, complaining of trembling in the limbs and weakness. On account of impairment of his memory, it was difficult to get a detailed account of his illness. Apparently it began three years before, with trembling in all the limbs, which gradually increased in severity. He could not say in what limb the movements first commenced. His work was arduous, necessitating his carrying heavy weights, but he was able to continue at it up to eight months prior to admission. From that time the tremors greatly increased, and, to support himself, he took to hawking laces in the streets, where, however, he had to take up his stand, as he was unable to walk from door to door on account of his tendency to fall. He was often dazed and stupid, but he never lost consciousness. Since the beginning of his illness he has been troubled much with severe headaches, which were not worse at night. He had had no lightning pains and no feeling of constriction round the waist. His appetite was bad, and he had difficulty in taking food and drink owing to the jerking movements; he had difficulty especially in swallowing liquids. The bowels had been loose, and he had at times lost control both of the bowels and of the bladder.

Six years before admission he had had gonorrhœa, and, six months later, a second attack, with bubo; while a year later he had syphilis, with a hard chancre, for which he received no treatment. Nothing of importance could be learned from him as to the family history. The following notes are from the Ward Journal:—

"16th October, 1899.—The absence of expression is very striking; he looks melancholic, and rarely directs the eyes towards one. There is no tremor of the lips, nor is the tongue tremulous when protruded, and only very rarely do any of the

facial muscles twitch, except the masseters. While watching him as he lies in bed, the legs especially are the subjects of convulsive movements, which are most marked in the extensors, the quadriceps extensor femoris being at times in a state of clonus. The same may be almost said of the tibialis anticus. This spasmodic contraction prevents him from standing steadily and from walking. It is quite evident that there is very appreciable diminution of the muscular power in the legs and also in the hands and arms. Spasmodic movements are also present in the muscles of the arms, especially about the shoulders, but he can hold out his hands fairly steadily.

"The movements in some respects suggest chorea: they are more, however, of the nature of a clonic spasm. They differ from those of disseminated sclerosis in not being exaggerated on intentional movement. They do not cease during sleep. There is no nystagmus.

"19th October, 1899.—As he lies on his back, it is noted that in both legs the quadriceps extensor femoris is affected more than any other muscle, and in each leg it is affected in the whole of its extent. Its contractions are sudden and strong, like those induced by an electric current. They number from 80 to 100 per minute, are symmetrical, and mostly synchronous on the two sides. When he lifts his legs off the bed, the voluntary movement arrests the spasm. The gluteal muscles are also affected, but their contractions do not number more than 22 per minute, are very irregular in their recurrence, and are not of great vigour. The muscles of the calf are very slightly involved. There is an occasional twitch of the foot, but practically none of the toes. The above noted movements in the arms are all but limited to the shoulders. The recti abdominales are also involved, but the diaphragm apparently is not, and the heart shows no irregularity. The muscles are not atrophied beyond what may be accounted for by want of use. The deep reflexes are exaggerated, jaw-jerk, arm-jerk, and knee-jerk being all extremely marked, but there is no ankle-clonus. Plantar reflex is also exaggerated.

"When he is made to sit with his legs over the side of the bed, the contractions of the quadriceps almost entirely cease; while contractions of the muscles of the leg, especially those causing dorsal flexion of the foot, become very marked. In addition to the larger contraction, a certain amount of fibrillary tremor is observed in the muscles of the calf. The toes are occasionally flexed and extended, but these movements are rare. While sitting, the movements of the masseters are well marked; when he stands on his feet, contraction ceases

in the muscles of the calves, but again become vigorous in the quadriceps extensor on both sides.

"The electrical reactions are normal. Sensation, both to simple contact and to painful stimuli, is apparently normal.

"The muscular sense and the sense of temperature seem normal, but his replies to queries are not always trustworthy. His mental condition is somewhat confused, and his speech is affected, his voice being almost a whisper, and his words sometimes slurred. His eyes have been examined by Dr. Rowan, and found to be normal."

This man remained in the hospital till 6th December, 1899. During that time he occasionally suffered from loss of control of the bladder and rectum. He had all along a fixed idea that his trouble was due to syphilis, and he was constantly asking for drugs for that disease. At times his mental condition was such that he refused food, refused to speak, and presented well-marked evidences of insanity. This condition had almost passed off before his dismissal; it was not due to fever, as the temperatures throughout were normal or subnormal. The muscular movements were sometimes so excessive, even during sleep, that he fell out of bed. When dismissed, he was able to walk with very slight assistance.

This case was sent in as one of chorea, but the movements were of such a nature as to exclude that disease. Their clonic character, their rapidity and rhythmic nature, and the fact that the spasms affected almost entirely muscles in a state of relaxation, tended to exclude all the more common forms of muscular spasm, so that ultimately a diagnosis of myoclonus multiplex was reached, which seemed to be confirmed by the facial expression and the mental condition. From what was seen of this man, it probably would not be far wrong to regard this affection as closely related to hysteria. The treatment adopted was mostly bromide of potassium and chloral, and its success was not greater than was anticipated.

## II.—CASE OF UNUSUAL OCULAR PARALYSIS.

By DR. FREELAND FERGUS.

Dr. Fergus related the main facts of a case where there was complete immobility of one eyeball. The condition, as far as could be ascertained, dated from birth. There was no growth in the orbit to cause fixation of the eyeball, and the pupil reflexes were normal.

*Dr. Monro* said that the case reminded him of some similar cases recorded by *Gowers* where the ocular paralysis was thought to be due to a rheumatic affection of the ocular nerves at a point where they entered the ocular muscles.

*Dr. Leslie Buchanan* considered it more likely that the immobility of the eyeball was due to congenital absence of some of the ocular muscles.

### III.—TWO SPECIMENS OF STRICTURE OF THE LARGE INTESTINE.

BY MR. R. H. PARRY.

CASE I.—*Scirrhus carcinoma of hepatic flexure of colon removed from a patient, æt. 56, after a preliminary right inguinal colotomy had been performed for relief of symptoms of acute obstruction.*

Mrs. M<sup>K</sup>. was sent to the Victoria Infirmary on 7th August, 1899, by Dr. Murray Young, Hamilton, as a case of acute intestinal obstruction. Patient enjoyed good health until three weeks before admission, when the bowels became obstinately constipated. Purgatives and enemas were tried with varying success. The appearance, however, of fæcal matter in the vomit, and the rapid progress of the abdominal symptoms, indicated that operative measures were urgently called for.

On examination, the abdomen was seen to be greatly distended, and it was also tympanitic and somewhat tender all over. Peristaltic movements were visible, and the accompanying spasms caused much suffering. Examination *per rectum et vaginam* gave no clue as to the seat of the obstruction.

In consideration of the age and the general condition of the patient, the great distension of the bowel, and the probability of the obstruction being a malignant tumour involving the large bowel above the rectum, it was decided to do, in the first instance, a palliative operation; accordingly, right inguinal colotomy was performed. An incision,  $1\frac{1}{2}$  inch in length, was made through the skin, about an inch above the outer half of Poupart's ligament, and the muscles separated, not divided. The cæcum was fixed to the skin by a few catgut stitches, opened, and a drainage-tube inserted, through which much gas and fæcal matter escaped. The rubber tubing, which was about the diameter of the index-finger, measured about 8 inches in length,  $1\frac{1}{2}$  inch of which lay in the lumen of the bowel, while



the outer end was received into a jar, and was maintained in position by means of two safety pins passed through it close to the wound, which again was fixed to the skin by two stitches. The parts were dusted over with iodoform, and a dry dressing applied. The acute symptoms disappeared within a few hours of the operation, and at the end of five weeks the patient expressed a strong desire to leave the hospital, as she felt in excellent health, and her bowels were moving naturally.

A firm, resistant mass could now be felt on the right side in line of ascending colon, close to the liver, and which was diagnosed to be a malignant tumour. The patient was advised to keep the colotomy wound open and to return for further treatment.

She was readmitted on 10th October, being now quite prepared to undergo another operation, partly in consequence of a return of her previous symptoms while at home, and also owing to the inconvenience attendant on the discharge from the colotomy wound.

The tumour was reached through a median incision above the umbilicus, and after adherent omentum had been separated, and the vessels ligatured, about 10 inches of the colon was excised. An attempt was made to bring the divided ends of the gut together by a continuous Lembert suture, but it had to be abandoned owing to the difficulty of bringing the ascending colon to the wound. A Murphy's button was therefore used, and the operation completed without trouble or delay. For the next few days there was considerable collapse, which was treated by the free administration of stimulants, and injections of liq. strychnia every four hours. After this, however, the patient improved steadily, and, towards the end of the second week, her condition was entirely satisfactory. The button was passed on the third week. The bowels acting naturally, the colotomy wound contracted to a narrow sinus, which finally closed after the mucous membrane was snipped off with scissors at its attachment to the skin.

[When seen in May, 1900, she was in the enjoyment of excellent health.]

*CASE II.—Fibrous stricture of sigmoid flexure removed from a patient, æt. 25, after a preliminary right inguinal colotomy had been performed for relief of symptoms of acute obstruction.*

J. M., housemaid, was sent to the Victoria Infirmary on 13th May, 1899, by Dr. Russell, Langside, as a case of intestinal obstruction. Until four days before admission the patient



was in enjoyment of excellent health, and the bowels moved daily or every second day. Constipation, followed by sickness and transient abdominal pain, were the first symptoms of her illness. On the evening of the 12th she was seized with severe abdominal pain, and, on the following morning, rectal injections were tried; but no relief being obtained, and the vomiting becoming stercoraceous, she was at once sent to the infirmary.

Through a median incision the abdomen was explored, and a large, firm mass, measuring about 3 inches in length, was felt in the sigmoid flexure, with the bowel below it empty, while that above was greatly distended. The wound was then closed, and right inguinal colotomy performed. Immediate relief followed. On 1st June the sigmoid flexure was removed, and the ends of divided gut brought together by a Murphy's button. The subsequent course of the case was in every respect satisfactory, and the colotomy wound closed after the mucous membrane from the sinus was removed.

[The patient was seen in May, 1900, and was very well.]

#### IV.—CARD SPECIMENS.

By DR. RUTHERFURD.

Three specimens of goitre successfully removed under local anæsthesia, the specimens weighing 10 oz., 13 oz., and 19 oz. respectively.

#### MEETING VI.—15TH DECEMBER, 1899.

*The Vice-President, DR. JOHN BARLOW, in the Chair.*

#### I.—CASE OF APPENDICITIS WITH ABSCESS IN THE RIGHT ILIAC FOSSA, AND GENERAL PERITONITIS: LAPAROTOMY: RECOVERY.

By DR. ROBERT KENNEDY.

Dr. Kennedy showed a boy, aged 11 years, who was admitted to Ward XIII in the Western Infirmary on 16th August, 1899, on account of intestinal obstruction, and of whom the following history was obtained:—

Fourteen days before his admission he was swinging, and was said to have "racked" himself. On the following day he commenced to vomit, but did not complain of any pain. Three

days later he complained of acute pain situated in the right iliac region, and passing down the right leg. Fomentations were applied, with some relief, and on the following day a very good motion was passed as the result of administration of castor oil. On the following day the bowels were again slightly moved. On 8th August he passed flatus freely, and thereby obtained much relief, but the vomiting continued. No flatus was passed after 13th August, and on the 14th an enema failed to cause the bowels to act. On the day before his admission he was screaming with pain, and the abdomen was much distended.

The patient previous to this illness had always been healthy.

When first seen after his admission to hospital the patient was much emaciated, his face was pale and anxious, his teeth and lips were covered with sordes, and his tongue was dry and brown. He lay on his back with his knees drawn up, the abdomen was greatly distended, marks of coils of distended intestine were visible on the surface, and the umbilicus was protuberant. Palpation revealed extreme tenderness over the entire surface, and not specially marked at M'Burney's point. No fluctuation could be made out over the right iliac fossa. Percussion, except over an area in the right flank, gave everywhere a tympanitic note. Examination of the rectum and of the hernia regions revealed nothing wrong. Vomiting was frequent; temperature was 97.6° F.; pulse 84, but weak; and respirations, which were entirely thoracic, 24.

Being in charge of the ward in Professor Buchanan's absence on holiday, Dr. Kennedy was sent for immediately on his admission, and, on examination, decided to open the abdomen without delay. This was done by an incision in the middle line, through which the distended coils of intestine immediately forced themselves. It was then observed that the entire peritoneum was red and inflamed, and that the coils of intestine were adhering to one another at many points. These adhesions were easily broken down in search for the cause of obstruction, but left raw and bleeding surfaces. No cause of obstruction was met in the small intestine, which was everywhere greatly distended, and on nearing the ileo-cæcal valve an adhesion between the parietal and visceral peritoneum was met. This adhesion was so slight that it gave way before the finger without any force being used, and about a pint of thick, foetid pus welled up into the abdomen. This was wiped away as it welled up. An oblique incision was then made in the right iliac region, and the abscess cavity washed out, the fluid entering by the median incision, in order to wash out that side

of the abdomen which had been contaminated with the pus, and escaping by the lateral incision. An examination of the region of the appendix was then made, and although the history pointed to the condition being a recent one, and although there was no history of previous attacks, there must have been mischief of longer duration, as the cæcum and neighbourhood were matted with dense and firm adhesions. No aperture could be detected, and, as the patient's condition was collapsing, it was not deemed advisable to proceed to remove the appendix at this operation, as this must have proved tedious in presence of adhesions so firm. The ascending colon was not distended, but contained a small quantity of scybalous masses.

As already stated, only the right side of the abdomen was washed out. The coils of intestine were then replaced with some difficulty, and the incisions closed, drainage being employed at the lower angle of the median incision, and through the lateral incision also.

During the night the patient slept but little, and remained in a more or less collapsed condition; but on the following day the temperature commenced to rise to normal, and flatus was freely passed, and his condition was much improved. Flatus continued to be freely passed, and on the fifth day two copious motions were passed without medicine or enemata. After this the bowels moved daily, and the patient's condition continued to improve.

On the seventh day he presented signs of commencing parotitis on the right side. This ultimately formed an abscess, which was incised on the fourteenth day, after which it quickly healed.

On the tenth day the drainage-tubes were removed from the abdomen, and the sinuses left speedily closed up.

The patient was allowed out of bed at the end of six weeks, and three weeks later, being in very good health, and having increased considerably in weight, was dismissed from hospital.

The patient is now in good health, and the abdominal cicatrices are efficient.

## II.—CASE OF APPENDICITIS: REMOVAL OF UNUSUALLY SMALL APPENDIX DISTENDED WITH A HARDENED MASS OF FÆCES.

BY DR. ROBERT KENNEDY.

Dr. Kennedy showed a man, aged 28, who was admitted to Dr. Patterson's wards in the Western Infirmary on 22nd February, 1899.

Two years before his admission he was confined to bed with acute pain in the right iliac fossa, and frequent vomiting. Since then he had several attacks of the same kind, the illnesses lasting from one to three weeks.

On admission to the Western Infirmary he was suffering from an attack. There was considerable tenderness over the abdomen, which was most marked at M'Burney's point. The abdomen was tympanitic, except over the right iliac fossa, where percussion gave a dull note. Maximum temperature was 100° F. He improved under treatment, and was dismissed well on 4th March.

He was readmitted on 15th March, as three days previously he had a recurrence of all his symptoms, viz., pain and tenderness in the right iliac fossa, vomiting, intestinal obstruction, and elevation of temperature.

Inspection showed a fulness in the right iliac fossa, and a hard mass, dull to percussion, could be felt internal to the anterior superior spine—of elongated shape, about 1½ inch in breadth, and extending from the middle of Poupart's ligament to 1 inch above the anterior superior spine. This swelling was very tender.

On 21st March Dr. Kennedy made an incision over the swelling in the right iliac fossa. On reaching the peritoneum, it was found greatly thickened, and firmly adherent to the cæcum. With some difficulty it was separated, and the cæcum exposed. This was found to be bound down on all sides by firm organised adhesions, which were separated with much difficulty, the general peritoneal cavity being opened in course of the separation. On separating the adhesions at the lower limit of the cæcum, and turning it forward, the appendix was found also firmly adherent. It was very short, and its length was equal to its breadth, the structure appearing as a spheroidal body, about the size of a hazel-nut, attached to the cæcum. It was tensely distended, and on applying the ligature, previous to its removal, it ruptured on its posterior aspect, and a hardened concretion escaped. It was ligatured close to the cæcum, and removed. The abdominal wound was closed in layers.

The patient recovered from the operation well, and on the third day the bowels were moved, and from this time onward his progress was rapid.

It is now nine months since the operation, and the patient has had no recurrences of his trouble, his health has been completely restored, and he has gained 4 stones in weight.

The appendix, which was removed, was found to be very



thin-walled on its posterior aspect, where it ruptured during removal, and being so tensely distended with its contents, doubtless rupture would have occurred very soon had no operation been done.

The concretion which escaped proved, on examination, to be hardened fæces.

Further, had operation in this case been longer delayed, and had rupture occurred, the abscess which would have formed would most probably not have remained limited or presented on the anterior abdominal wall, for the adhesions were particularly firm in front and weak towards the peritoneal cavity. A speedy infection of the general peritoneal cavity would, therefore, have been the result of rupture of this appendix.

*Dr. Rutherford* cited a case under his own care at the Royal Infirmary two years ago, where general purulent peritonitis was present, and where, after removal of the sloughing appendix, a counter opening was made in the middle line, and the abdomen washed out, with success. He was of opinion that the prognosis in such cases was better than in those in which, by a more insidious process, the infection of the peritoneum produced merely an exudation of fibrin and agglutination of the intestines. In the latter form of peritonitis, apart from the fact that it was impracticable to irrigate the infected surfaces, there seemed also to be more complete intestinal paralysis, and with it an intoxication, probably in part from the intestine, but probably also primary, and due to the failure of peritoneal reaction (*cf.* Treves on *Peritonitis*).

He took occasion to refer to the account of the illness of Allan Burns given in the second edition of his book on the *Surgical Anatomy of the Head and Neck*. He died in 1811, at the age of 30, and is said to have died of cholera morbus. An abscess had burst into the rectum, and (*post-mortem*) it was found to surround the caput cæcum. The diagnosis was of interest as showing the elasticity of the term at that date—quite a generation after Hunter—and the obscurity in which abdominal diseases were involved.

### III.—CASE OF EXCISION OF THE ENTIRE LOWER LIP, WITH RESTORATION OF THE LIP BY TRENDLENBURG'S METHOD.

By DR. ROBERT KENNEDY.

Dr. Kennedy showed a man, aged 78, from whom, seventeen months ago, he excised the entire lower lip on account of an



extensive epithelioma, and formed a new lip by Trendelenburg's method. The new lip had undergone no retraction, had a satisfactory appearance, and fulfilled its functions perfectly.

#### IV.—CASE OF GUMMA OF THE MAMMA.

BY DR. ROBERT KENNEDY.

Gummata of the mamma are of rare occurrence. In many of the larger text-books they are dismissed in a line or two as a possibility. Hutchinson does not note them in his book on syphilis, but Lancereaux gives several instances of them. In one of his cases the tumour was very hard, and situated close to the nipple, and he states that "anyone who had not observed the commencement of this affection, and did not know the antecedents of the patient, would have been unable to distinguish this tumour from that known under the name of scirrhus of the lactiferous ducts." In the following case, at one period, the tumour closely resembled a scirrhus of the mamma:—

Mrs. G., aged 30, sought advice at the Western Infirmary Dispensary, in March, 1898, on account of a sore on the right leg. The patient was emaciated and of a pale and earthy colour. She stated that previous to her marriage in April, 1896, she had enjoyed good health, and had suffered from no disease. Her troubles commenced after the birth of her only child in December, 1896, after which her health began to fail. She states that shortly after the birth of her child she suffered from a discharge from the vagina, and that shortly afterwards she suffered from a sore throat; that about the same time she had a cutaneous eruption over the body and anterior surfaces of arms and legs. This eruption, she states, resembled the rash of measles, and remained about fourteen days. Her hair, also, about this time fell out very rapidly.

About six weeks previous to her first visit to the hospital the ulcer on the right leg commenced, and when first seen was about an inch in diameter, circular, with sloughy base and undermined edges, and situated about the middle of the leg and on its outer side. There was also present another ulcer, about the size of a crown piece, situated in front of the right thigh, about its middle. This commenced a week or two later, but presented similar characters to that on the leg. There was also a swelling situated on the antero-external aspect of the left thigh, in the substance of the vastus externus, about an inch above the patella. This swelling was

about the size of a damson, of doughy consistence, and tender on being firmly pressed. The three lesions mentioned were the only morbid conditions which could be discovered. The patient was treated with iodide of potash, and both ulcers soon commenced to heal, while the doughy swelling in the vastus externus disappeared entirely in several weeks.

The patient continued the medicine regularly, but despite this, in July, 1898, four months after commencing treatment, two ulcers appeared on the left arm, one on each side, in both instances starting as small swellings in the subcutaneous tissue. These, however, after increasing to the size respectively of a sixpence and a shilling, commenced to heal. The treatment was continued, and the ulcers situated on the leg and thigh both healed completely during the winter of 1898.

Although she never ceased taking the medicine regularly, she developed, in April, 1899, two further lesions, this time situated on the right fore-arm. Both commenced as subcutaneous swellings, both on the anterior aspect, one about 2 inches above the wrist, and one at the junction of the upper and middle thirds. The lower swelling softened, broke, and discharged, and commenced to ulcerate, while the upper remained hard and attained the size of a hazel-nut; but the skin at no time became involved.

In June, 1899, she returned with two additional swellings, one situated near the left breast, and one situated in the substance of the right mamma. They had only recently been detected. On examination, there was a tumour about the size of a pigeon's egg situated in the substance of the pectoralis major at its lower border, midway between the breast and the left axilla. The tumour was distinctly in the muscular substance. It was of hard consistence, and painful only when firmly pressed.

The swelling in the right breast was situated in the substance of the gland, in its upper and inner quadrant. It was about the size of a walnut, and as hard as a scirrhus. It was freely movable on the underlying tissue, and the skin was not attached to it at any point. It was not tender except on firm pressure, and gave her no trouble except for the knowledge of its presence. No enlarged lymphatic glands could be felt.

The patient was then prescribed perchloride of mercury in addition to iodide of potash, and very soon after this treatment was commenced the character of the two last developed swellings changed, becoming both softer and smaller. In a few weeks the swelling in the pectoralis disappeared entirely,

by September the ulcers on the left arm and that on the right fore-arm had quite cicatrised, while the swelling in the upper part of the right fore-arm was much smaller.

In November, 1899, the swelling in the right fore-arm still remained as a hard tumour about the size of a pea, situated subcutaneously, while the tumour in the right mamma was about the size of a damson, soft, freely movable, and scarcely at all tender, presenting characters similar to those of an adenoma.

The patient has had no miscarriages; her child, now about 3 years of age, presents no signs of syphilis, and has no history of syphilitic manifestation. Her husband suffered previous to marriage from "venereal trouble," which appears from the description to have been gonorrhœa. The history of the patient points undoubtedly to the date of her infection having been subsequent to the birth of her child.

#### V.—ON THORAX RESECTION FOR EMPYEMA AND THE RESULTING DEFORMITIES.

BY DR. H. RUTHERFURD.

Janet A., æt. 7, was admitted to Ward II, Royal Hospital for Sick Children, on 7th July, 1898, when I was temporarily on duty, on account of a discharging empyema of over a year's standing, with cough, spit, and emaciation. There was a history of pulmonary trouble in March of the previous year, and of a swelling appearing on the left side of the chest in the following June. An opening made by the doctor in attendance had persisted since.

On admission it was noted that patient was pale and thin. There were two sinuses to the outer and inner sides of the left nipple, giving escape to a copious foul discharge.

On the right side, respiratory murmur and percussion note were set down as moderately good. On the left, which was contracted, dulness was found over the whole pulmonary area, with the exception of the extreme apex. Respiratory murmur harsh, and with no vesicular character. Cardiac impulse was visible and palpable in the neighbourhood of the xiphoid cartilage to the right of the middle line.

The urine contained no albumen, and the temperature was normal.

Two operations were done, the first on the 14th July, 1898, at which, after reflecting the soft parts, the chest wall was resected from the ninth to the fifth ribs inclusive, the portions of rib removed being about  $4\frac{1}{2}$  inches long. The pleura was

found greatly thickened, in places half an inch thick. The opening in the pleura was quite small, and gave no adequate drainage to the contents of the cavity, which contained putrid pus mixed apparently with mucus. The suggestion of a fistulous opening in the lung was confirmed by the bubbling which was produced in the contents of the cavity. The cavity was swabbed out and stuffed with iodoform gauze (no irrigation). Patient stood the operation well.

As the discharge continued to be profuse, and the lung was very completely collapsed, and had been so for a long time, it was thought right to remove some more of the chest wall. This was done a week later, when, the incision having been carried upwards and backwards, portions of the second, third, and tenth ribs, with corresponding pleura and intercostal tissues, were excised. The wound could only be partly closed, the cavity being stuffed and requiring rather frequent dressings for the most of patient's stay in hospital.

She was sent out on 14th October, after which healing was soon complete. She has profited by frequent visits to the convalescent home, and is now (December, 1898) in excellent general condition, entirely free from cough and spit, and with no moist sounds either in the right lung or in what remains of the left.

The heart is almost entirely to the right of the middle line, where its impulse can be seen and felt. My friend and colleague, Dr. J. Lindsay Steven, was kind enough to examine the lungs lately, and is of opinion that the right is sound, while on the left side, although by no means dull in the upper half, he does not think that any true respiratory murmur is being produced, what there is being probably transmitted.

It is, perhaps, an open question whether in this case an equally satisfactory result could not have been obtained from a much less severe operation. I am aware that competent observers are of opinion that the amount of expansion that can be looked for, even in long standing conditions of contraction of the lung, is much greater than could be expected *à priori*, and this specially as regards cases in children. At the time, however, I considered that twelve months' collapse gave little or no chance of re-expansion, and am still of opinion that any less extensive operation would have involved a still more tedious process of wound healing than attended the actual procedure. The amount of cough and expectoration, taken with the depraved general state of the child, also contributed to the view that a radical procedure was demanded,



and one that would lead to its result in the shortest possible time. In a similar case to-day, I should require positive evidence of tubercle before abandoning hope of recovery by less severe measures. The case also suggests the necessity, even in the child, for something more than a mere incision in the acute or subacute stage. The excellent prognosis of acute empyema in the young subject is well established, and had drainage been efficient from the onset, and care been taken to prevent the opening from becoming contracted by cicatrization or the approximation of adjoining ribs, it is not likely that even the existence of a pulmonary fistula would have prevented healing taking place within a comparatively short time.

I desire, however, to call attention to the actual deformities which have resulted, not from the disease, but from the operative procedure, and which have only become fully developed since healing was complete. The sinking in of the chest wall I was prepared for, in fact, it only fulfils an object of the operation; but I was prepared for more, namely, that there should have been some lateral curvature such as is apt to attend certain pleurisies which have proceeded to recover, with, it may be supposed, obliteration of the pleural cavity, and which is more generally associated with recoveries from empyema, with or without removal of ribs.

Of lateral curvature I find no trace: but, further, there is present a condition of atrophy of the abdominal muscles which, I think, is plainly due to the resection of the chest wall and interference with the intercostal nerves. When the child coughs, the upper left half of the abdominal wall bulges as low as the umbilicus, and the costal cartilages are heaved outwards and upwards. When she breathes quietly, the margin of the cartilages is seen to be raised away from the middle line, in marked contrast to those on the sound side, and the left linea semilunaris is not recognisable in its upper half, nor are the fibrous intersections of the rectus in this region.

The atrophy of the abdominal muscles, and the loss of a fixed point upon which the contracting chest wall can pull, are, I think, in some degree concerned in the absence of lateral curvature, but this is principally due, in my opinion, to the removal of the ribs and the loss of their leverage on the spine in their depression and inward rotation.

I have under my care at present in the Royal Infirmary another case of chronic empyema presenting a similar result of thorax-resection.



Hugh M., æt. 13, first came to me in August, 1897, with an open empyema, which the surgeon formerly in charge of him ascribed to the perforation from abscess around a tubercular rib. By successive operations at intervals of one to three months, the ribs from the second to the tenth were removed from the angles forwards, in the case of the lower ones to the cartilages. Several of these were the subject of tubercular osteitis, and only a few days ago I reopened the chest, removing masses of adventitious bone, and scraping out a tubercular sinus which was the source of a persistent discharge. Here there is atrophy of the upper half of the abdominal wall on the right side, elevation of the costal margin, and entire absence of lateral curvature—the slight normal dorsal curvature with convexity to the right persisting (see illustrations).

Here, both locally and generally, the results have been less satisfactory, although the operation done was not less complete, and the clearly tubercular origin of the disease must be borne in mind. The patient is anæmic, and somewhat puffy looking; his fingers and toes are clubbed, and while there is no albuminuria, his liver seems somewhat enlarged, and there is a suspicion of commencing amyloid disease. I am not without hope that the thoracic focus of disease may ultimately be got rid of, and that, with the suppression of the septic tract which has been the source of toxic absorption, the general health may improve, even to the disappearance of any suggestion of amyloid disease, possibly even of the clubbing of his extremities and heavy look of the face.

The operation of thorax resection was distinctly brought forward by Schede (*Deutsch. Congres für Innere Medicin*, 1890), and is to be distinguished from the early procedure associated with the name of Estlander (*Revue Mensuelle de Médecine et de Chirurgie*, 1879), in which the removal of the ribs was subperiosteal. For the latter it may be urged that there is much less loss of blood, and, indeed, in thorax resection proper, the bleeding cannot fail to be considerable, hence the desirability, and even I would say the clinical necessity, of doing it in stages. But, as a matter of fact, bleeding from the intercostal arteries is easily controlled when they are cut clean across, and in subperiosteal operations they are apt to be torn. Further, as the cases I have narrated show, account must be taken of the weakening of the abdominal wall due to interference with nerve supply. But, on the other hand, where there is great thickening of the pleura, or where it is markedly





CASE I.—Janet A.

Shows (a) deeply sunk scar in front ; (b) atrophic condition of upper part of left abdominal wall ; (c) absence of curvature.



CASE I.—Janet A.

Shows resulting deformity as seen from behind, with absence of curvature





Class I -- Inset A.

abdominal wall; (c) absence of curvature.





CASE II.—Hugh M.

Front view—shows bulging of flaccid abdominal wall.



CASE II.—Hugh M.

Back view—shows line of spinous processes.



tubercular, it will interfere more or less with the result in view.

Subbotin's operation, in which two vertical incisions are made, through which the ribs are divided at two points, seems to me one which is not likely to grow in favour. It does not seem fitted to produce the collapse of the side that is desired, and even that amount which will result from it must be slow of attainment.

## VI.—NOTES ON CLINICAL SURGERY.

BY DR. JAS. H. NICOLL.

*I. Case of congenital stenosis of the pylorus, diagnosed (by Dr. John Ritchie), and relieved by operation.*

On 18th July, 1899, I was asked by Dr. Ritchie to see in consultation, Baby P., then aged 5 weeks, suffering from "congenital obstruction of the pylorus." The facts of the case, as observed by Dr. Ritchie, led me to agree with him in what I had been at first inclined to regard as a somewhat "speculative diagnosis." These facts were that the child had been born healthy, and had for a week remained so, except in that fifteen to twenty minutes after each meal (he was at first "on the breast") he vomited the entire contents of his stomach. The vomiting was a prompt and complete ejection of the milk previously taken, in large part clotted, but not otherwise changed. It was not preceded or accompanied by hiccough, nausea, pain, or difficulty; and, the act accomplished, the infant appeared to be perfectly comfortable, until hunger induced another meal, which, in turn, was in due time vomited.

This persisted, and its effect became evident in progressive emaciation. Ultimately, through the attenuated abdominal parietes there stood out the form of a considerably dilated stomach, across the anterior wall of which there passed, from time to time, marked peristaltic waves.

Operation, which Dr. Ritchie had in view in requesting the consultation, was proposed to the parents, who, naturally enough, postponed resort to what, in the circumstances, appeared to be an exploratory and tentative proceeding. A week later, the infant having become exceedingly emaciated and feeble, the parents requested operation, which was accordingly performed, at the age of 6 weeks.

The pylorus was found represented by a bulky ring of muscular (or fibromyomatous?) tissue. In the child's wasted

and enfeebled condition, a pylorotomy appeared hopeless. I, therefore, carried out what I intended as a temporary measure, an operation which was practically a Loreta's. Fig. 1 (p. 78) represents the state of matters existing. Between 1 and 1' is the dense and bulky ring of (fibromyomatous?) tissue, arranged in the form of a funnel, tapering to its densest part at 3. I opened the stomach by the incision (2), passed in a pair of dressing forceps, forced this with a screwing motion down through the constriction into the free intestine below 3, and

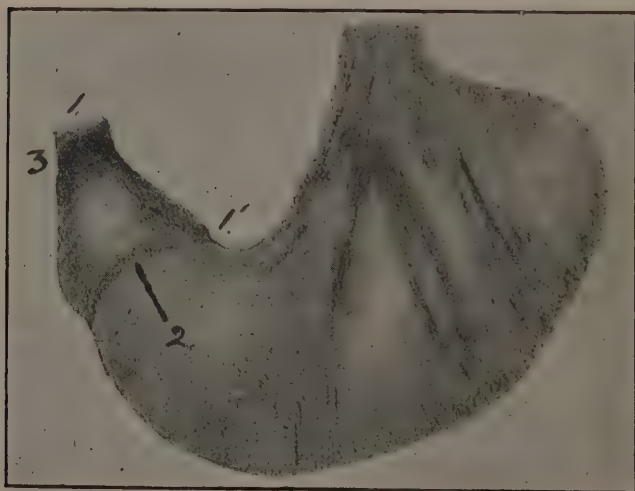


FIG. 1.

## CONGENITAL HYPERTROPHIC STENOSIS OF PYLORUS.

*Diagrammatic representation of conditions found at the operation.*

- 1-1'.—Bulky firm ring of (fibromyomatous?) tissue constituting a funnel at the pyloric end of the stomach, and tapering to its densest and narrowest part at 3.  
2. Incision in stomach wall during operation.

then expanded its blades till the peritoneal coats at 3 ruptured, thus widely dilating the thickened and practically completely stenosed pylorus. Suture of the stomach wall, followed by suture of the parietes, completed the operation.

The infant made a perfect recovery from the operation, the effect of which has been complete relief of the previous obstruction. Vomiting has disappeared, digestion is satisfactory, and the bowels (previously, of necessity, obstinately constipated because empty) now act regularly. The result

is evident in the infant's condition. Fig. 2 (p. 79) is a photograph of the child taken four and a half months after operation. The change from extreme emaciation to the present plump condition has been very striking. Whether the relief obtained by the operation is to prove permanent



FIG. 2.

CONGENITAL HYPERTROPHIC STENOSIS OF PYLORUS.

Photograph of patient taken 8th December, *i.e.*, four and a half months after operation.

remains to be seen. The operation was intended as a temporary measure adopted in face of the extreme debility of the infant. Up to now, however, there has not been the slightest indication of that re-contraction which was feared, and for which I had reserved pylorotomy in the event



of the infant gaining strength as the result of the palliative measure.

At the present date (eight months after operation) he remains in perfect health, taking milk and farinaceous foods daily.

*Remarks.*—So-called “congenital hypertrophic stenosis of the pylorus” has been gradually claiming attention of late years. There are now on record some thirty or more cases in which sufficient evidence exists to establish the diagnosis: and the impression is gaining ground that the affection is considerably more common than has been supposed. The symptoms are such as to lead to some difficulty in the diagnosis; and it is not improbable that the terms “infantile marasmus,” “gastric catarrh,” and “gastric myasthenia,” may have covered such cases.

*Symptoms.*—These have been present in certain cases from the date of birth. In others, they have begun to manifest themselves only after an interval of days or weeks. (This probably is dependent on the degree of stenosis present, absolute or partial.) They are as follows:—

1. *Vomiting.*—This is seemingly causeless, is unaccompanied by other symptoms of dyspepsia, and is ultimately persistent, despite ordinary appropriate treatment: though, in certain cases, it has been for a time diminished or abolished by dieting and washing out the stomach. These three characteristics of the vomiting have been fairly constant in recorded cases. In other features of the vomiting, cases have varied widely. Thus, in regard to—

(a) *Reaction.*—In certain cases this has been found normal, while in others acidity has been found increased, and in others, again, diminished.

(b) *Period.*—In certain cases vomiting has occurred after each meal, either soon after, or hours after. In others, vomiting has only occurred after several meals have been taken.

(c) *Nature.*—In certain cases the milk has been returned unaltered; in others, coagulated; in others, accompanied by evidence of fermentative processes in the stomach; and in a few, accompanied by small quantities of bile (partial stenosis only?).

2. *Constipation.*—This is a constant feature; and, inasmuch as the intestines have been invariably found empty, its presence is not extraordinary.

3. *Emaciation.*—Progressive, and ultimately extreme.

4. *Physical signs*.—In the early stages, while the body is well-nourished, and dilatation has not commenced in the stomach, there may be none. Later, when the emaciation of the abdominal parietes makes their detection the more easy, the following may be evident:—(a) Peristaltic gastric waves. (b) Periods of normal dilatation of the stomach (after a meal?), alternating with periods (after vomiting?) during which the organ may be felt like a ball, firmly contracted (spastic contraction?). (c) Marked abnormal dilatation of the stomach, associated with, and rendered the more prominent by, a collapsed condition of the rest of the abdomen, consequent upon the empty state of the intestine. (d) Pyloric tumour, detectable by palpation. This has been present in a few cases only, cases in which the hypertrophy of the pyloric tissues has been marked, and the abdominal parietes very thin. In the large majority of recorded cases, it has not been present.

*Prognosis*.—Broadly stated, the affection is fatal, unless relieved by surgical treatment. It is suggested, by at least one writer on the subject, that cases of the affection have been reared by careful dieting (presumably cases where the stenosis was of low degree). It is not, however, suggested that this is other than exceptional; and, as there exists no actual evidence that any given case surviving gastric symptoms in infancy has been a case of congenital hypertrophic pyloric stenosis, this exception to the general rule of fatal issue cannot be held as proved.

*Morbid anatomy*.—At least twenty cases have been subjected to *post-mortem* examination. In all of these no lesions of importance other than those connected with the stomach would appear to have been found. In connection with the essential lesion, the following parts have been investigated in different cases:—

*Œsophagus*.—In several, this is noted as having been dilated. In the large majority it has been unaltered.

*Stomach*.—In certain cases the organ has been found little, if at all, altered. In others, marked hypertrophy has existed. In others still, abnormal dilatation, in a few to an extreme degree, has been present. In a number, hypertrophy and dilatation have co-existed.

In no case, apparently, has any distinct evidence of gastritis been found.

*Pylorus*.—The same funnel-shaped circular thickening of the pyloric end of the stomach has existed in all. This has varied in extent from half an inch to 2 inches; and has tapered to an apex at or beyond the pylorus. In several

cases it is noted that the pyloric end, or apex, projected into the duodenum, as does the cervix uteri into the vagina.

The lumen has varied from that of a "No. 4 catheter" to complete impermeability. In no case of congenital hypertrophic pyloric stenosis has any actual atresia been found.

The mucous membrane of the pylorus has been described as absolutely normal, as exhibiting evidence of catarrhal inflammation, and as being puckered into longitudinal folds, in different cases.

Microscopically the examination of the tissues of the thickened pyloric ring has yielded various results in different cases. These have included hypertrophy of all the muscular coats, hypertrophy of the circular coat alone, fibrous hyperplasia of the submucous coat, combination of muscular hypertrophy with fibrous thickening of the submucosa.

*Intestine.*—This has in all cases been found empty and collapsed.

*Treatment.*—There would appear to be a general consensus of opinion that the only hope of saving the lives of these infants lies in surgical intervention.

This would appear to have been carried out in two cases—the present, which promises to prove a permanent success, and a case operated on by Dr. Willy Meyer in New York, in the summer of 1898. In this case a gastroenterostomy was performed by means of Murphy's button, and proved fatal at the end of thirty hours, apparently through obstruction due to the button (quoted by Meltzer, *New York Medical Record*, 20th August, 1898).

*Causation.*—Various theories have been advanced. As, however, their consideration lies within the provinces of the physiologist and pathologist, it must suffice here to enumerate the various views at present held. These are as follows:—

1. That the condition is the result of a primary congenital developmental aberration, possibly connected with the junction at the pylorus of "two different processes of development."

2. That the condition is the result of a congenital hypertrophy of the muscular walls of the pylorus, secondary to antagonistic and inco-ordinated action of the muscles of the stomach on the one hand and the pylorus on the other, this inco-ordination being dependent on functional disorders of the gastric nervous system, and ultimately resulting in "congenital gastric spasm."

3. That the condition is the result of spasmodic contraction arising from gastric (dyspeptic?) irritation after birth, and, therefore, not congenital.

4. That the condition is the result of chronic inflammatory processes.

*Bibliography.*—It would appear (Meltzer) that Williamson, in 1841, and Davoski, in 1842, each recorded a case, and that for forty-six years thereafter the subject lapsed from notice. In 1888 Hirschsprung, of Copenhagen, recorded a third case, and since then cases have been recorded from time to time.

Of the more important of the readily accessible communications may be mentioned recent papers by Meltzer, of New York (*New York Medical Record*, 20th August, 1898), Thomson, of Edinburgh (*Edinburgh Hospital Reports*, 1896, vol. iv; and *Scottish Medical and Surgical Journal*, June, 1897), and Rolleston and Hayne (*British Medical Journal*, 23rd April, 1898).

Thomson's papers contain a statement of the "congenital gastric spasm" theory which he has put forward in explanation of the origin of the pyloric stenosis, along with accounts of three cases. Rolleston and Hayne's paper is devoted to an analysis of the published accounts of cases which they have collected, with the record of a case under their care. Meltzer's paper contains, along with particulars of a case, a wide review of the subject, embracing a discussion of the symptomatology, pathology, and treatment of the affection, and a criticism of Thomson's theory.

The following bibliographical list is taken from Meltzer's paper, and succeeding it are the further references I have been able to find:—

<sup>1</sup> Ashby, *Archives of Pædiatry*, 1897.

<sup>2</sup> Finkelstein, *Jahrbuch für Kinderheilkunde*, 1896, vol. xliii, p. 105.

<sup>3</sup> Thomson, *Scottish Medical and Surgical Journal*, 1897.

<sup>4</sup> Henschel, *Archiv für Kinderheilkunde*, 1891, vol. xiii, p. 32.

<sup>5</sup> Schwyzer, *New York Medical Journal*, 1897.

<sup>6</sup> Rolleston and Hayne, *British Medical Journal*, 1898.

<sup>7</sup> Williamson, *London and Edinburgh Monthly Journal of Medical Science*, 1841, p. 23.

<sup>8</sup> Davoski, *Caspar's Wochenschrift*, 1842, No. 7.

<sup>9</sup> Hirschsprung, *Jahrbuch für Kinderheilkunde*, 1888, vol. xxviii, p. 61.

<sup>10</sup> Graü, *Jahrbuch für Kinderheilkunde*, 1896, xliii, p. 118.

<sup>11</sup> Landerer, *Angeborene Stenose des Pylorus*. Dissertation, Tübingen, 1879.

<sup>12</sup> Maier, *Virchow's Archiv*, 1885, vol. 102, p. 413.

<sup>13</sup> Huebner, quoted by Finkelstein.

<sup>14</sup> Peden, *Glasgow Medical Journal*, 1889, p. 416.

<sup>15</sup> Pitt, *Transactions of the Pathological Society of London*, 1892, p. 63.

<sup>16</sup> De Brun Kops, *Nederlandsch Tijdschrift voor Geneeskunde*, 1896,

No. 19 (after Thomson).

<sup>17</sup> Thomson, *Edinburgh Hospital Reports*, 1896, vol. iv.



<sup>18</sup> Schwyzer, *New York Medical Journal*, 1896, 21st November.

<sup>19</sup> Fenwick, S., *The Disorders of Digestion in Infancy and Childhood*, London, 1897.

<sup>20</sup> Leesschaft, *Jahrbuch für Kinderheilkunde*, vol. xxii, p. 164.

<sup>21</sup> Brandt, *Die Stenose des Pylorus*. Dissertation, June, 1851.

List of references after Meltzer, *New York Medical Record*, 20th August, 1898.

The succeeding references fall to be added :—

(a) Cantley, *British Medical Journal*, 1898, ii, 1490 ; and *Lancet*, 1898, 12th November, 1264.

(b) Hartman, *North American Journal of Homœopathy*, 1899, 3, s., xiv, p. 41.

(c) Still, *British Medical Journal*, 1899, 11th February.

(d) Pfaundler, *Wien. Klin. Wochenschr.*, 1898, p. 1025.

(e) Edsall, *Journal of American Medical Association*, 1899.

(f) Champneys and D'Arcy Power, *British Medical Journal*, 1897, 20th March.

(g) Emerson, *New York Medical Journal*, 1890, 9th August.

(h) Stern, *Wiener Klinische Wochenschrift*, 1898, ii, p. 1024.

(i) Hammer, *Prager Medicinische Wochenschr.*, 1899, xxiv, p. 25.

(j) Van Valzah and Nisbet, *Diseases of the Stomach*, New York, 1899.

(k) Sommering, *Zeitschrift für Chirurgie* 1897, vol. 1, p. 100. France.

Hammer (i) insists on the distinction between congenital stenosis (characterised by the hypertrophic thickening so constantly found) and congenital atresia (in which no such thickening exists). Both conditions give rise to the same symptoms. He fully describes a case of congenital atresia in which the pyloric end of the stomach and the upper end of the duodenum formed *culs-de-sac* abutting on one another and united by a fibrous band, in which there was ultimately found an exceedingly fine channel, which, however, had proved impervious to fluid under pressure used as a test. He refers to two cases of congenital obstruction of similar nature previously published by Leesschaft and De Brun Kops (Nos. 16 and 20 in Meltzer's list (?), *vide supra*). Emerson's case (g) must be regarded also as one of atresia. In the description of this case, for which I am indebted to Dr. John Lindsay, of Glasgow, it is stated that the pylorus itself was dilated, while just beyond it the lumen of the duodenum terminated abruptly, owing to "a gathering together of all the tissues of the gut at that point, much as a bag is drawn together by a string." In the case recorded by Champneys and D'Arcy Power (f), circular thickening of the pylorus coexisted with a complete transverse septum occluding the duodenum at the orifice of the bile duct. The recently published treatise by Van Valzah and Nisbet (j) contains



(with the exception of mention in Keating's cyclopædia and Fenwick's treatise, *vide supra*) the only reference of any note to the subject which I have been able to find in current text-books. These authors carefully distinguish between congenital atresia and congenital stenosis, and point out that, while the symptoms of the two are similar, those of the former necessarily run a rapidly fatal course.

Pfaundler (*d*), arguing apparently for the most part from appearances he has noted in *post-mortem* examinations, holds that "stenosis" of the pylorus in infants is not necessarily congenital in origin, but is often developed in the early days or weeks of life. He regards it as not being a stenosis, in the sense of organic narrowing, but a spasmodic condition, or fixation of a normal functional phase of the stomach; and he states that such fixation of a normal functional phase is common at the moment of death, and is found at the necropsy (but whether in subjects who have during life exhibited the symptoms of pyloric obstruction, or not, does not appear very clearly in his communication).

Apart from the questions of treatment, on which opinion appears to be fairly formed, and of causation and nature, on which speculation is busy, the important aspect of the subject is that of diagnosis. The symptoms are well defined and vary but little. Unless examined in detail, however, they present a clinical picture which, as a whole, possesses a strong superficial resemblance to that of infantile marasmus, associated, as it so frequently is, with various forms of gastric disturbance. That it may be easy to fall into such error will be evident to those seeing much of the disorders of infancy; and it is, in this respect, somewhat striking that for forty-six years the significance of the combination of symptoms characteristic of the disease should have been forgotten or overlooked. When the case of Baby P. (*vide supra*) was brought before the Glasgow Medico-Chirurgical Society, Dr. Ritchie, in giving particulars, stated that what had prompted him to observe the infant's symptoms closely, and ultimately to feel a considerable degree of confidence in his diagnosis, was the presence in his recollection of the particulars of Dr. Peden's case (<sup>14</sup>), published in Glasgow in 1889.

## II. Case of perforating gastric ulcer successfully excised six days after perforation.

The rule in perforated gastric ulcer is "operate early." Cases in which operation is delayed more than a few hours

for the most part die. The present case is the exception. The following is a brief synopsis of the facts:—

Lena M., æt. 22, sent into Western Infirmary on 19th April, 1899, by Dr. W. S. Paterson, who had that day seen her for the first time, as a case of gastric ulcer perforated some time previously.

*History.*—For months, had been obstinately constipated, and had suffered from pain after food, often relieved only by vomiting.

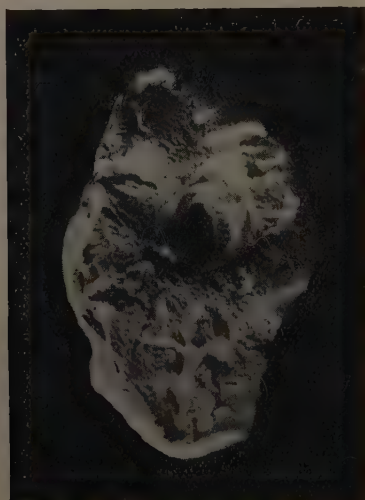


FIG. 3.

Perforated gastric ulcer, with surrounding indurated area of stomach wall (2 inches by 1½ inch), from a photograph of the specimen.

Six days before admission, sudden severe collapsing pain over whole abdomen. Remained in bed for three days, much pained, sick at intervals, and vomiting everything taken. At the end of that time, another severe collapsing attack of pain, terminating in syncope. Pain gradually became less severe, but abdomen became distended, and very tender. Remained in bed, vomiting at intervals, and increasingly weak. On morning of sixth day a fresh increase of pain, followed by alarming collapse. Dr. Paterson summoned, and consequent removal of patient to infirmary. On admission, patient presented all the evidences of grave collapse; and abdomen was distended, board-like, and acutely tender.

*Operation.*—Peritoneal cavity occupied by free gas, sero-pus with gastric odour, and food particles. Intestinal coils coated with soft purulent flakes.

Perforated ulcer in anterior wall of stomach, near greater curvature. This excised, along with surrounding indurated area of gastric wall, 2 inches by  $1\frac{1}{2}$  inch (Fig. 3, p. 86), and resulting wound closed by suture. Aperture made in abdominal wall in flank, at outer border of quadratus lumborum, on each side. Into these were sutured five-eighths inch rubber tubes. Abdomen repeatedly flushed, fluid entering by laparotomy wound and escaping by lumbar tubes, and carefully mopped dry. Laparotomy wound closed, with third five-eighths inch tube in lower angle.

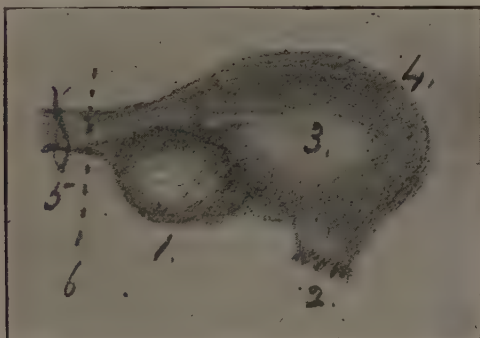


FIG. 4.

RUPTURED TUBAL GESTATION OF SIX WEEKS, REMOVED BY LAPAROTOMY.

1. Ovary. 2. Fimbriated extremity of Fallopian tube. 3. Tubal gestation sac. 4. Site of rupture into peritoneal cavity. 5. Ligature. 6. Section line.

*After-history.*—Tubes removed four days later. All three wounds ultimately healed by first intention. Ten days after operation, double acute suppurative otitis media (there was no parotitis) developed. A week later acute phlegmasia alba involved the entire left lower limb, and the following week the patient developed septic pneumonia on the left side. Ultimately, after the formation of a pulmonary abscess (with foetid purulent sputum) and its obliteration, patient was dismissed well on 27th July, and remains so now.

*Remarks.*—When operation in cases of perforated gastric ulcer is undertaken early, the operator cleanses the peritoneal

cavity of escaped gastric contents before any serious degree of pyogenic mischief has been set up in the abdomen. When operation is delayed more than a few hours, the operator has to deal, not with gastric contents only, but with purulent peritonitis often of a plastic type. Cleansing under such circumstances is a matter of extreme difficulty, and the case frequently ends fatally by secondary systemic pyæmia or septicæmia. In this case, notwithstanding the vigorous cleansing measures adopted, the patient developed typical systemic pyæmia, and ultimately recovered purely in virtue of her own acquired tissue immunity.

### III. *Ruptured tubal gestation removed by laparotomy.*

Mrs. —, seen on the morning of 1st November, in consultation with Drs. McGregor-Robertson, Marion Gilchrist, and J. S. McKendrick. Patient's last period had been six weeks previously, and for the preceding three days she had suffered from vaginal hæmorrhage, in character unlike menstrual fluid. On the morning of 1st November she was suddenly seized with acute abdominal pain, most severe in the epigastrium; and speedily became so utterly collapsed that, by the time we met, shortly after, all idea of operative remedy was out of the question. Drs. Gilchrist and McKendrick remained, and by assiduous use of the usual remedies, in particular of hypodermic doses of strychnine and subcutaneous injections of saline solution, so far rallied the patient as to make operative treatment possible, if hazardous. Fifteen hours after rupture this was carried out. The patient's condition, after the abdomen was opened, giving vent to a large quantity of partially coagulated blood, became so alarming that the operation had to be speedily completed. This involved leaving in the peritoneal cavity much blood-clot, to be dealt with by phagocytosis. The illustration represents roughly the parts removed. The tubal sac contains a foetus about three-sixteenths of an inch long. The patient made an uninterrupted recovery (Fig. 4, p. 87).

### IV. *Calculi from three cases of prostatic hypertrophy in which the calculous formation was secondary to, and masked by the symptoms of, the prostatic hypertrophy.*

Such cases are not uncommon. In April, I showed three at a meeting of this Society. The present specimens, from cases occurring since then, are :—

1. *A phosphatic calculus*, weighing 345 grains, removed, in

the M'Alpin Nursing Home, from a patient, æt. 65, sent to me by Dr. Hamilton, of Dalry. The calculus is quadrilateral in form, owing to its developing in a post-prostatic pouch in which it was found tightly wedged at the operation. The patient has made a perfect recovery. He had had symptoms due to his enlarged prostate for several years, for which he had used a catheter twice a day. During the past six months the vesical irritability, and the amount of his residual urine, had both markedly increased.

2. *A phosphatic calculus*, weighing 160 grs., removed from a patient, æt. 67, sent to me by Dr. Allan, of Ardrossan. He had had symptoms due to a much enlarged prostate, for a number of years, and for which he had been using a catheter several times daily. For three months, frequency and pain had been much aggravated. He has made a good recovery.

3. *A true prostatic calculus* removed from a patient, æt. 56, sent to me by Dr. M'Donald, of Motherwell. The specimen is, comparatively, a rarity. It is a hard calculus of lime salts. Its body is button-shaped, measuring five-eighths of an inch across, and a quarter of an inch thick at its centre. From one of its sides spring three processes, and from the other two. These vary in length from one-eighth to three-sixteenths of an inch, and extended into recesses in the prostate. At the operation it was found imbedded in the prostate just posterior to the internal urinary meatus. The patient had for years suffered from typical symptoms of enlarged prostate, and he has a much enlarged prostate. The operation was designed to be prostatectomy by the combined suprapubic and perineal method. On opening the bladder suprapubically, however, this calculus was found and removed, after which it was thought well to abandon, meanwhile, the projected prostatectomy. The patient made a rapid recovery.

*Remarks.*—Cases of formation of calculus complicating senile enlargement of the prostate (and often clearly secondary to the retention and cystitis produced by the prostatic hypertrophy) frequently present great difficulty in diagnosis. This arises from two causes:—(1) The patient is already suffering from symptoms of disordered urination due to prostatic enlargement, and the symptoms of calculus formation superadded are apt to be overlooked; (2) even when increased frequency and purulency of urine, hæmaturia, and pain after micturition have aroused the suspicion of calculus formation, the detection



of the stone may be very difficult. Owing to its position in the post-prostatic pouch it frequently escapes contact with the sound. Further, the prostatic mass may bar the passage of the cystoscope, or, if not, force the beak so far upwards and forwards into the fundus of the bladder as to render impossible all attempts to inspect the post-prostatic recess.

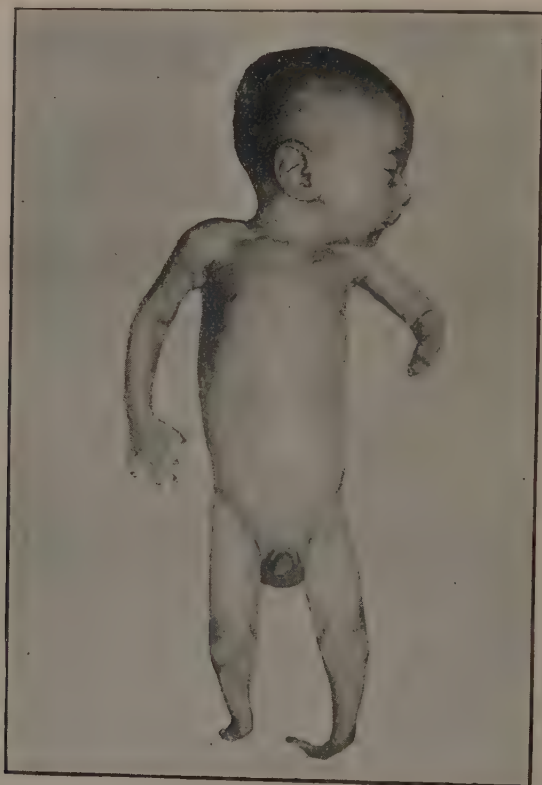


FIG. 5.

Case of congenital absence of bones in hands and feet.

*V. Case of congenital absence of a number of bones in hands and feet.*

The patient, then aged five weeks, was sent to me some months ago by Dr. Illingworth. It was then exceedingly puny, and has since died. The illustration, reproduced from

a photograph, shows the malformation of the hands and feet (Fig. 5, p. 90).

The left hand is represented by a tubercle, of the size of a horse-bean, on the radial side of the carpal stump. In the right hand the proximal phalanx of the index is absent. Each foot is represented by a rudimentary tarsus prolonged through a still more defective metatarsus into a barely recognisable great toe, that of the left foot being considerably longer than that of the right.

*Remarks.*—This is obviously not the usual case of amputation by intra-uterine bands or adhesions. In the *Glasgow Medical Journal* for April, 1899, is a very full and copiously illustrated account, by Dr. John Lindsay, of a case of apparently similar nature, though higher degree, which was presented to the Obstetrical Society of Glasgow, on 25th January, 1899, by Drs. Jardine and Lindsay. In discussing the probable causation of the defective development of the limbs in the case he reports, Dr. Lindsay says (after dismissing, for reasons given, the idea of intra-uterine adhesions), "It seems to me that these" (the defects in the limbs) "can only be satisfactorily explained by supposing some cause within the embryo itself."

That observation would appear to be applicable to the present (Dr. Illingworth's) case. And it happens that in this case there is to record that which may or may not have any bearing, but which at least should be noted. During the early weeks of the pregnancy the mother developed an acute whitlow of the right index finger. This ran a course of several weeks, terminating locally in the necrosis and loss of the terminal phalanx. It was complicated, and also followed, by "blood poisoning," as evidenced by repeated "shivering fits" and attacks of "fever," suppurative tonsillitis, and diarrhoea.

#### VII.—CASE OF PROFOUND APHASIA AND MENTAL CONFUSION CURED BY TREPHINING AND EVACUATION OF A LARGE HÆMORRHAGIC CEREBRAL CYST.

By DR. J. LINDSAY STEVEN AND MR. JAMES LUKE.

The following case of aphasia is deserving of record, firstly, on account of the completeness of the recovery which followed the operation undertaken for its relief, and, secondly, because of the clear indications for operation which developed during its

progress. On admission the aphasia was most profound, and was accompanied by an incomplete paralysis of the right arm, associated with a degree of rigidity of the fingers. The aphasia was not only motor, but sensory as well, the patient being clearly word-blind, if not also word-deaf. As regards the nature of the lesion giving rise to the speech-disorder there were no very certain indications, although, on the whole, the phenomena suggested the presence of hæmorrhage rather than any other lesion. Disease of the heart, disorder of the kidneys, and syphilis were excluded, and at first the patient was treated as suffering from the effects of cerebral hæmorrhage. The sudden and perfectly definite development of convulsive spasms, limited to the right side of the face, clearly indicated that an attempt to relieve the patient by trephining over the left motor area should be made. A large hæmorrhagic cyst situated in or over the left cerebral hemisphere was exposed and evacuated. A few days afterwards the patient recovered the power of speech and the use of his arm. He has remained well since, and, as you see to-night (15th December, 1899), there is no trace of his speech-defect remaining, and the power of his right arm is practically as good as ever. He is now on the point of leaving the infirmary for the convalescent home.

The following are the notes of the case as preserved in the Ward Journal, the clinical history having been recorded by Mr. Hugh M'Laren, M.B., C.M. :—

James M., æt. 38, a mason, was admitted to Ward 7 of the Glasgow Royal Infirmary on 4th September, 1899, under the care of Dr. J. Lindsay Steven, suffering from aphasia and paralysis of the right arm.

The following history was obtained from his wife and sister :—

Until the onset of the present illness he had enjoyed good health. He suffered from sciatica six years ago, but he never had acute rheumatism or any specific fever. On 29th August, 1899, he went to his work in the morning in his usual health; when he returned home in the evening he said he was tired, and went to bed at once without taking any food. All night he was very restless, getting out of bed several times during the night. On the morning of the 30th, his wife noticed that she was unable to make out what he was saying, and also that he was paralysed on the right side. He has been more or less confined to bed since the onset of the illness. He sleeps fairly well, but the appetite is poor, and the bowels are constipated.

*Family history.*—His father died (æ. 45) of jaundice, after twelve months' illness. His mother is alive and well. All his brothers and sisters (eight) are alive and well. He has had four children; three are alive and well, one died of inflammation of the brain after seven days' illness.

*Condition on admission.*—He has a healthy and well-nourished appearance. The face is flushed; the pupils are equal, and respond to light and in accommodation. There is a slight droop of right upper eyelid. The tongue is coated with a white fur, and is protruded in the middle line. No facial paralysis is present. He is somewhat dull mentally. Usually he does not appear to understand what is said to him, but occasionally he does do what he is asked to do. During the examination he was unable to utter a single syllable.

Pulse numbers 64: it is of fair volume and tension, and regular in force and rhythm. Little or no atheroma of the radial arteries is present. Respirations number 28, and are regular.

*Chest.*—The apex beat is a punctuate impulse in the fourth interspace,  $3\frac{1}{4}$  inches to the left of the middle line. The upper margin of the cardiac dulness is at the upper edge of the fourth rib; the right is an inch and a half to the left of the middle line; and the left is  $3\frac{1}{2}$  inches to the left of the middle line. The cardiac sounds are pure.

The percussion note over both lungs is resonant, and the respiratory murmur is accompanied by a few coarse râles. The upper margin of the hepatic dulness cuts the sixth rib in the mid-clavicular line, and in that line measures 4 inches.

The organs of the abdomen present normal characters.

There is well-marked loss of power in the right upper extremity. He can perform slight flexion and extension at the elbow-joint, and he can move the shoulder a little; there is well-marked wrist-drop, and the fingers are semiflexed and rigid.

There is no loss of power in the lower extremities. The knee-jerks are well marked on both sides, and ankle clonus is present on the right side. The plantar reflexes are well marked on each side. The cremasteric, abdominal, and epigastric reflexes are not very active. He has lost control of the sphincters to a considerable extent, the urine, and occasionally the fæces, being voided involuntarily.

The urine is amber coloured; specific gravity, 1022; no albumen; no sugar; phosphates are thrown down on boiling.

On 6th September, 1899, I (J. L. S.) entered the following note in the Ward Journal:—This morning the patient is considerably more confused and confusing than when Dr.

Lindsay Steven saw him yesterday. Aphasia seems to be very complete, although it is somewhat difficult to differentiate the precise character and classification of the speech disorder. The nurses have been quite unable so far to make out anything that he says, although it is apparently obvious that he frequently attempts to give utterance to his thoughts. The expression of his face is, on the whole, very intelligent, and it seems as if he fully perceived and appreciated his surroundings. He sleeps but little at night. He sometimes says "yes" and "no," but that only when he has been considerably stirred up. As a general rule, he replies to all questions only by a vague smile, from which it is impossible to be sure whether he has understood the question or not. Yesterday (5th September), when asked to put out his tongue, he did so; but to-day he does not, the nearest attempt being a slight opening of his mouth. When asked to whistle he makes no attempt to do so, but says "yes" somewhat vigorously when asked if he can whistle. Yesterday he spontaneously whistled on the nurse to attract her attention. It cannot be said that he is not word-blind. When the two sentences, "Put out your tongue" and "Shut your eyes," are plainly printed, he looks at them a long time without any attempt to fulfil the command, although, from the expression of the face after looking at the words, it seems as if he were attempting to indicate that he understood what was printed on the paper. The fact, however, of his making no attempt to do what is asked renders this doubtful. When he is asked to read aloud the sentence "Shut your eyes," he begins counting "1, 2, 3." At another time he makes sounds as if repeating letters, but only the letter "N," which does not occur in the sentence, is made out. When given a book upside down, he turns it right before attempting to read it, but he cannot apparently pronounce any of the words he sees. When his own name, made up with block letters, is presented to him upside down, he makes no effort to rectify the error, and when the word is put before him in its proper position, there is no indication that he interprets it aright. At this point he is suddenly and sharply asked to put out his tongue, and he does so at once; he is then asked to sit up, and makes at once a vigorous attempt to do so. He is then sharply asked to shut his eyes, but will not, even when Dr. Lindsay Steven shuts his own eyes to show him. When commanded to hold up his left hand, he makes no attempt to do so; but it is observed that with these last two commands (spoken loudly to him) he makes vigorous attempts at conversation, the most of the sounds being inarticulate, but among



them "I can't," or "I won't," is distinctly recognised. The droop in the right upper lid is, perhaps, less pronounced to-day, but a right-sided incomplete facial palsy, though slight, is quite unmistakeable, especially when he smiles, as he frequently does in a knowing manner during the attempts at conversation.

Mucus tends to collect in the right angle of the mouth and in the right eye. He moves the right arm slowly when asked to do so, but there is a quite evident tendency to rigidity. This is specially marked in the fingers, which are usually held flexed on the palm: as yet there is no great difficulty in overcoming this rigidity. A tap on the extensor muscle is followed by a well-marked jerk of the hand. He draws up both legs easily. The patellar reflex is exaggerated on the right side, and on this side there is well-marked ankle clonus.

*25th September, 1899 (J. L. S.).*—At 11.15 A.M. to-day, just as Dr. Lindsay Steven is commencing the ward visit, a twitching of the right side of the face is observed in this case, of a somewhat massive character. The right eye is spasmodically opened and closed. The right angle of the mouth is drawn backwards and slightly upwards; there is slight spasmodic jerking of the right naso-labial muscles. At the same time the root of the tongue is jerked backwards and downwards, the anterior portion of it being thus knocked against the palate, whilst the floor of the mouth is jerked downwards behind the chin. The whole series of movements affecting the eye, the right labial angle, and the root of the tongue present a rhythmical character.

The right arm and right leg do not partake at all in the spasm. The convulsion terminates absolutely abruptly after having lasted about seven minutes, the face becoming quite quiescent and the expression intelligent in a moment's time. So far as can be judged from his appearance, he seems to be conscious during a spasm, but the aphasic condition renders it impossible to obtain any corroborative evidence of this from the patient himself.

In addition to the facial convulsion described above, at least seven other seizures fall to be recorded. The footnote gives the nurse's detailed account of these and subsequent fits while under observation in the medical ward.<sup>1</sup>

<sup>1</sup> *Note of fits.*—*22nd September, 1899 (2.10 P.M.).*—Short spasm of right side of face.

*24th September, 1899 (2.50 P.M.).*—Fit lasting five minutes; twitching confined to right side of face; bit his tongue.

5 P.M.—Patient had a fit lasting about a minute; convulsion confined

After improving considerably as regards speech and general health, the patient relapsed somewhat on the 17th and 18th September. His aphasia returned as severely as ever, and he became intellectually dull and somewhat lethargic. For a few days before the relapse he had regained completely the control of his sphincters, but since the 18th this again has been considerably lost.

The right hand, as regards its loss of power, is not materially worse; but it has been noticed, with the onset of the relapse just described, that there has been a distinct tendency to dragging of right leg.

It is worthy of note that the relapse just described has been accompanied by a distinctly subfebrile temperature of a remitting type, and on the 22nd and 23rd inst. the temperature was definitely high, remaining about  $101^{\circ}$  night and morning.

Before the relapse the temperature had been distinctly subnormal for at least ten days.

The patient has always had a ruddy complexion, but latterly the cheeks and lips have been distinctly more flushed.

The urine is highly concentrated, of a deep orange colour, but otherwise presents no abnormality, containing neither sugar nor albumen. It is impossible to be sure whether he suffers from pain in the head, but occasionally his face has been noticed to have a drawn expression, and he often puts his left hand over the left forehead and temple.

To-day it is almost certain that he is word-blind. The plainest command written or printed excites no obedience. "Do what this paper asks you to do—shut your eyes" is shown to him in all ways. After looking at it for a long time he makes some vague motions of his left hand, but from first to last no attempt to shut his eyes.

to right side of face; mouth drawn upwards; pupils slightly dilated, responding to light. Patient seemed conscious, put out his tongue when asked to do so immediately after the twitching ceased. Foamed slightly at mouth; was not drowsy after seizure.

6.5 P.M.—Fit lasting two and a half minutes; twitchings confined to face and right hand, lower jaw working up and down as if he were chewing. Pupils equal, dilated, and responding to light; face flushed, foamed at the mouth, did not bite his tongue, could be roused easily after fit ceased.

25th September (12.30 P.M.).—Fit lasting two minutes; twitching confined to right side of face.

5.30 P.M.—Fit lasting four minutes, similar to the others noted—bit his tongue, tried to put out his tongue when asked to do so. While twitchings were going on, foamed at the mouth.

9.20 P.M.—Twitchings upwards of right side of face only, lasting about two and a half minutes; did not bite his tongue; no foaming at the mouth; pupils slightly dilated, equal, and react slowly to light.

[*Note by Dr. J. Lindsay Steven.*—On consideration of all the phenomena, Dr. Lindsay Steven arrived at the conclusion that the lesion involved a wide area of the surface of the left cerebral hemisphere. The presence of the word-blindness indicated that the lesion was not confined to the neighbourhood of Broca's lobe. The rigidity of the fingers of the right hand suggested a cortical situation of the lesion, and the development of Jacksonian epilepsy left no doubt on the point. There was no longer any doubt as to the propriety of operation, and, after consultation with Mr. James Luke, acting for Mr. J. H. Pringle, the patient was transferred to Mr. Pringle's wards, where Mr. Luke operated on 30th September, 1899. Owing to the large size of the cavity of the cyst the disc of bone was not replaced, and the cavity was allowed to fill up by granulation, which it has done very satisfactorily.]

Since the time of dismissal from the infirmary the patient has been kept under observation, and the following notes give an account of his condition up to July, 1900. It will be seen from these notes that, during his residence in Ward 7 before the operation, he must have been in a very confused state of mind, not knowing properly where he was, and possibly also not interpreting aright the words which were spoken to him. Although he imagined that he was back at school learning his letters, it is remarkable that he was able to recognise Dr. Lindsay Steven the first time he saw him after the operation. He is still, however (July, 1900), when questioned on the matter, perfectly definite in his statement that he had no proper idea of where he was while in the medical ward, and that he had a confused idea that the physicians in attendance were schoolmasters.

[The following are the notes of the last two examinations of the patient:—

*28th April, 1900 (J. L. S.).*—The patient reports himself to-day after having been three weeks at Bearsden Convalescent Home. Since leaving the surgical ward on 22nd December last, he has remained quite well as regards his speech, and the power of his right arm and leg. To-day, with the dynamometer, he registers 38 k. with the right and 39 k. with the left hand. He says, however, that he still experiences a slight stiffness when he closes the right fist firmly.

About two months ago he caught cold, and was confined to bed with a cough for eight or nine days, but with this exception has no other complaint to make. He says that during the

whole time he was in Ward 7 he had no proper consciousness of where he was, or of whom the people were round about him. He has a vague remembrance of thinking that he was at school learning lessons, so that in all probability he was not only word-blind, but word-deaf, and it is now extremely doubtful whether he ever really understood anything that was said to him or written to him while he was in Ward 7.

*7th July, 1900.*—Patient reported himself to-day complaining of cough, with a slight spit, which, he says, prevents him sleeping on his left side. After his return from Bearsden he worked for about three weeks as a canvasser, but gave it up, as he found the excessive walking very tiresome. The pain in the region of the tendo Achillis and the swelling of the legs, which troubled him while at similar employment just before he went to Bearsden home, are not now troublesome. He remained at home a week or so, and a fortnight ago resumed his former employment as a mason. This work, though tiring him more, seems to suit him better.

Pain in the left side of the chest in the region of the heart has troubled him for the last fortnight, but is only present at night. Rest always relieves the pain. While canvassing, pain was troublesome in the left lumbar region. He has no headaches. Since leaving hospital patient has been almost teetotal, as twice when he took "a half" of brandy and soda he felt his head light.

Lungs and heart are normal to examination. With the dynamometer patient registers 39 k. with the left and 38 k. with the right hand.]

## MEETING VII.—12TH JANUARY, 1900.

*The President, MR. H. E. CLARK, in the Chair.*

### I.—DERMOID OVARIAN CYST.

BY DR. E. A. GIBSON.

The specimens which I here show you were removed to-day by me, with the assistance of Dr. Edington, from a lady, æt. 31.

The history of the case was that, twelve years ago, she contracted gonorrhœa from her husband, and since then has



been more or less an invalid, suffering from great lumbar and iliac pains, menorrhagia, and dysmenorrhœa.

On opening the abdomen, we found both Fallopian tubes dilated and adherent to their corresponding ovaries. This specimen is the right ovary and tube. The tube is seen to be dilated to the size of the little finger, and its fimbriæ are agglutinated together. The ovary shows a recently ruptured Graafian follicle. The patient menstruated only a week ago. The whole mass was firmly adherent to the posterior pelvic wall.

The other specimen is the left Fallopian tube. This tube with its ovary were so very adherent to the rectum, and so embedded in adhesions that they had to be dissected out separately. The tube shows the same characteristics as its fellow. This ovary—the left—was about the size of a walnut, and the interesting point about it is that when it was removed and opened, it was found to be a dermoid. You will see that it is lined with thick fair hair.

## II.—CASE OF SUPERFICIAL EMPHYSEMA OCCURRING DURING LABOUR.

BY DR. J. BARR STEVENS.

The following notes form an account of a case of a comparatively rare condition:—

On 8th August, 1897, I was called to attend a young woman, aged 20, in her first confinement. All through her life, and during pregnancy, she had enjoyed good health, and was now at her full time. For twelve hours she had been having labour pains, but not of any great severity. On examination, I found the pelvis roomy, the os uteri dilated to about the size of a shilling and becoming softened, the presentation normal. Four hours later the os had become almost fully dilated, the pains regular, frequent, and severe. As the rectum was very loaded, I ordered an enema, and soon afterwards the head descended almost to the perinæum. The pains were then very severe, and the patient was straining to the utmost, holding in her breath and bearing down as strongly as she possibly could. Twice during the acme of a pain I heard a small clicking sound resembling that produced by squeezing in a part of a felt hat and allowing it to spring out again. In spite of the strong pains the head did not continue to advance. Suddenly it was observed by the nurse that the patient's face was swollen. An examination showed that both eyes were almost



closed by extensive swelling, which, on touching, I was surprised to discover was surgical emphysema, readily recognisable by crepitation and pitting on pressure. This was present equally on both sides of the face and neck, was also well developed over the upper part of the chest, reaching down behind as far as the top of the crests of the scapulæ, and, in front, slightly affecting the breasts, while it also extended down the right arm for a short distance.

It seemed to me that, whatever was the cause of this condition, the proper procedure was to terminate labour as quickly as possible. I therefore put the patient under chloroform, and, applying Neville's forceps, delivered her of a very large full-time female child, weighing a few ounces over ten pounds. Half an hour afterwards, failing to express the placenta by vigorous pressure on the fundus, with proper precautions I introduced my hand into the uterus, and brought the placenta away. There was only a slight adhesion, easily separable, at the right cornu. As there was a somewhat extensive tear of the perinæum, I put in a couple of silkworm gut sutures. The patient complained of pain at both shoulders, at the sternum at the level of the second ribs, and at the left side of her neck about the level of the top of the hyoid bone. At none of these situations could I discover any evidence of fracture, and the patient had no difficulty in breathing, turning, or moving, as would be expected were a rib fractured.

The patient made an uninterrupted recovery. An anti-septic douche was given every day for three days. The emphysema rapidly and completely disappeared, very little trace of it being evident on the fifth day, and it was entirely gone on the seventh. It disappeared first from the face.

At no time was there the slightest displacement of viscera, nor any evidence of pneumothorax. For four days the patient had slight pain in the throat on swallowing, but there was no spitting of blood. The temperature was normal all the time. One stitch was removed from the perinæum on the fourth day, the second on the eighth day. It healed practically by first intention.

When I met with this case I was not aware that such a condition ever occurred, and I sought as well as I could for some explanation of it. I knew that the most common cause of surgical emphysema was injury of the lung tissue by the end of a fragment of a fractured rib. In some cases the lower ribs have been known to be broken by the violent contraction of the abdominal muscles during labour, but I could make out no evidence of fracture of the lower or any of the other ribs.

I then remembered a case of extensive surgical emphysema resulting from a fracture of the larynx, the result of injury following old disease which, while a house surgeon in the Royal Infirmary, I had the opportunity of seeing in Dr. Middleton's wards, afterwards published in the *Glasgow Hospital Reports*, vol. i. In my case the pain at the side of the neck, together with the slight difficulty on swallowing, seemed to suggest some such origin, but there was not the slightest hæmoptysis, while in Dr. Middleton's case this was profuse. The good health which the woman had enjoyed all her life, both before and after her confinement, is also against this view.

Bearing on the causation of such a condition the following sentences from Coats's *Manual of Pathology* are interesting. After defining the two forms of pulmonary emphysema, he goes on to describe the first, viz., interlobar or interstitial, "which it will be seen," he says, "is comparable with surgical emphysema. This form, which is very rare, occurs when the air vesicles are ruptured, and the air escapes into the interstitial tissue. The air vesicles may be actually torn open by a broken rib coming against the lung, or by the lungs being directly wounded. On the other hand, the air vesicles may rupture from acute over distension. Thus it may be the result of very violent expiratory efforts, generally with, but sometimes without, obstruction of the air passages. It has been met with in whooping-cough, in diphtheria, and in violent coughing from the inhalation of irritating material. The violent efforts with closed glottis cause such compression of the air in the alveoli that at some places the vesicles rupture." Then again, "the air sometimes travels along the connective tissue for some distance, just as in the case of subcutaneous or surgical emphysema. It may pass to the root of the lung, and from there up along the trachea and out to the subcutaneous tissue of the neck, and so lead to a surgical emphysema."

Compression of the air in the alveoli, described as the cause of the affection, is not likely to be more marked than during labour, especially in such a case as this, where there were exceptionally strong pains, together with the greater rigidity of the soft parts to be expected in a primipara, so that in the absence of other explanation we may conclude that the emphysema in this case arose from rupture of pulmonary vesicles.

In all, about thirty cases of emphysema occurring during

labour have been put on record. The first reported was in 1784 by Dr. Simmons, of London, who described "a case of emphysema brought on by severe labour pains." In later years De Soyre, in the *Gazette des hôpitaux*, Paris, 1864, wrote a paper upon "emphysema of the face and upper part of the chest produced by violent labour pains caused by rigidity of the orifice of the uterus."

In 1877, Dr. Burton, of Brighton, Massachusetts,<sup>1</sup> reported a case in which he said that at the sterno-clavicular notch he felt the air passing up the left side of the trachea. He discussed three other cases published by Downs, Worthington, and Atthill.

Worthington held the view that the condition resulted from rupture of the upper part of the lung. Atthill, on the contrary, maintained that had this occurred without previous adhesion of the two surfaces of the pleura, thus allowing the air to pass into the subcutaneous tissue of the neck, it would have escaped into the pleural cavity and caused collapse of the lung. Burton himself believed that there was rupture into the posterior mediastinum, and consequent passage of the air into the loose areolar tissue round the œsophagus.

In the *London Medical Record* in 1881, p. 158, there is a summary of two cases<sup>2</sup> recently published—one in Germany, the other at New York. In the first case the patient's face, besides being puffed up, became cyanotic. The emphysema extended above to the insertion of the platysma, and below as far as the third rib, and behind not beyond the anterior borders of the trapezii muscles. For some days there were sore throat, slight cough, and difficulty in swallowing, but no trace of the condition remained in a week. In the second case the emphysema was limited to the same region as in the first.

In 1881, Dr. T. W. Hubbard, of Tunbridge Wells, reported a case<sup>3</sup> in which the eyes were closed by the emphysema. His attention was drawn to the condition by the patient complaining of difficulty in breathing. He had the opportunity of attending the same patient in a second labour, when emphysema did not occur, but he applied forceps, as soon as the os was fully dilated, with a view to preventing it.

The most careful report of a case is given by Boxall.<sup>4</sup> In

<sup>1</sup> *British Medical Journal*, 1877, vol. ii, p. 663.

<sup>2</sup> Livoff in *Meditz Vestnik*, No. 34, 1880; and Dr. Haupt in *New York Medical Record*, December, 1880.

<sup>3</sup> *British Medical Journal*, 1881, vol. ii, p. 897.

<sup>4</sup> *Lancet*, 1887, vol. i, p. 122.

his case the emphysema became obvious the morning after the labour, and here also it was noticed that it was limited behind by the edges of the trapezii. It extended up to within an inch of the mastoid process. He concludes his report by saying, "in the primiparity of the patient, the severe expulsive pains, the onset of the emphysema soon after labour (often during the second stage), its proclivity for the region of the suprasternal notch, the absence of disturbance of the respiratory function and of other serious symptoms beyond disfigurement, together with the invariable tendency to absorption of the air by the end of a week or ten days, my case, though much less severe in character than many, agrees with the majority of those previously recorded."

In 1884, Dr. Francis Champneys, before the Royal Medical and Chirurgical Society, read<sup>1</sup> "An account of an experimental enquiry into the causation of cervical emphysema, otherwise styled emphysema of the neck, occurring during labour and during violent expiratory efforts." This enquiry was complementary to one formerly made on the relation of emphysema and tracheotomy.<sup>2</sup>

In the experiments healthy foetuses which had never breathed were used. After a summary of the clinical features of the condition and details of the method of the experiments, he expressed the opinion that such cases probably occur once in every two thousand labours, and he came to the following conclusions:—

1. The cause of emphysema of the neck during labour is rupture of the lung tissue; air escaping near the root of the lung, passing beneath the pulmonary pleura into the anterior mediastinum, and so beneath the deep cervical fascia into the neck. This is the same route by which air gets to the anterior mediastinum after tracheotomy, only in the latter case the air travels in the opposite direction.

2. The weakest parts of the lungs are the spaces between the lobules and the fissures between the lobes, especially at the anterior surface of the root of the lung, and here it is that the rupture occurs.

3. Pneumothorax is never associated clinically with this form of emphysema, and when it occurred during these experiments it had nothing to do with the production of the emphysema.

4. To restrain bearing down, as by an anæsthetic, and to hasten labour are sound rules of practice.

<sup>1</sup> *Lancet*, 1884, vol. ii, p. 349.

<sup>2</sup> *Lancet*, 1882, vol. i, p. 871.



It will, therefore, be seen that such a case as that I have described is by no means unique, and that different views have been advanced as to the causation of the condition. At the same time, the cases are not so frequent as to make the report of a fresh one entirely without interest. In my case the emphysema affected a wider area than any other of which I have seen the reports.

*Note.*—At the Medico-Chirurgical Society, Dr. Munro Kerr drew my attention to a paper by P. Scheffelaar Klots, published in *Zeitschrift für Geburtshülfe und Gynäkologie*. In this valuable paper there are collected reports of forty cases, drawn from various sources, and including most of those referred to above. In at least two of the cases the area affected is more extensive than in my case. Of the forty cases, thirty-one occurred in primiparæ (93 per cent), two in multiparæ, and of the others there is no record in this particular.

There is one case recorded in which a woman with a narrowed pelvis, necessitating delivery by forceps, became cyanotic, had a quickened pulse, and died. "At the autopsy, which took place thirty-two hours after death, there was found no injury of the bronchii or their branches. The lungs filled the chest very completely, and showed all the appearances of a recent emphysema." In this case the emphysema had not become evident in the neck, so that it is scarcely fair to include it in this connection, but Klots holds the opinion that superficial emphysema occurs as a result of an interstitial secondary to a vesicular emphysema, therefore he includes this case because "by showing what changes occur in the lungs it can serve as an example in the explanation of the origin of the condition." Klots discusses the question whether, when this condition arises, there is any evidence of the woman having any predisposition, phthisis for example. He finds that in eight of the recorded cases (1? para and seven primipara) the women were not healthy (five of these were reported to be delicate, one had formerly had pleurisy, another hæmoptysis, while in one eclampsia occurred). Of the other cases, three were reported to be strong, and nine very strong. Of the others nothing is said, so that the presumption is that they were healthy, therefore it is concluded that a lung affection or a predisposition is not necessary to the occurrence of emphysema.

"The cause of emphysema is abnormal strength of pains excited by abnormal opposition, *e.g.*, (1) exceptionally large child, with a normal pelvis; (2) narrowing of the pelvis;



(3) rigidity of the soft parts; and there are examples from the combination of the two latter.”

Klots concludes his able paper as follows:—“In conclusion, one cannot help mentioning that it is my conviction that emphysema has occurred far more frequently than one would gather from literature. It must seem strange to everybody that, with all the thousands of births where all the conditions necessary for its production are present, no more cases have occurred. Therefore it might not be too rash to take it for granted (1) that emphysema is frequently overlooked; (2) that where it has been diagnosed it has not been understood; and (3) that many cases have not been published.”

*Dr. J. K. Kelly* said he had only had one case of emphysema occurring during labour. It was a primipara, and the labour was very severe. The emphysema involved one side of the face and neck; and he thought at the time that it was due to rupture of the larynx, though it might have been caused by rupture of the lung alveoli.

*Dr. Munro Kerr* referred to an analysis (by Klotz) of forty cases, from which it appeared that the condition was much more frequent in primiparæ, and was always associated with great difficulty in labour. Sometimes the emphysema was followed by dyspnœa. Of the forty cases, only one ended fatally, and in that case there was found to be marked emphysema of the lung alveoli.

*Dr. David Watson* said he had had a case where the emphysema involved the mucous membrane of the mouth, and he was of opinion that there must have been a rupture somewhere in the upper air-passages.

*Mr. Clark* said he always had a difficulty in explaining the infrequency of pneumothorax in such cases. In surgical emphysema from fracture of ribs, air did not enter the pleura to any extent, although it was the place where it apparently ought to go. He had seen two cases of emphysema resulting from an expulsive respiratory effort.

*Dr. Stevens* replied.

### III.—REMARKS ON POST-CLIMACTERIC HÆMORRHAGES, ILLUSTRATED BY A SERIES OF NINETEEN CASES

BY DR. JOHN EDGAR.

In temperate climes the climacteric generally occurs between the ages of 40 and 50. Occasionally it is sudden, but, as a

rule, for one to three years it is irregular. There may be frequent hæmorrhages, but more often one or more menstrual periods are missed at a time. The quantity also is apt to vary, the tendency being, after a period of amenorrhœa, for a profuse hæmorrhage to occur. It is rather unfortunate that such irregularities, which have given rise to the apt term, the "dodging period," for this time of a woman's menstrual life, are so frequent, because the woman herself, and in many instances also her medical attendant, are led to regard as menstrual, hæmorrhages really due to disease of the internal genital organs. Such hæmorrhages may coincide with the menopause, or they may be post-climacteric, and may then follow so closely upon the menopause as to very readily lead to error; but in other instances they do not begin till several years after the change of life, and are then regarded as menstrual only by very ignorant or very careless medical men. Unfortunately, however, women themselves too often make this mistake. For this reason I think every practitioner should look upon it as a duty to instruct their patients on such questions.

In both hospital and private practice, I make it a rule to recommend a bimanual examination in all cases of excessive uterine hæmorrhage during the menopause, and in all cases in which hæmorrhage, be it scanty or profuse, sets in after an interval of six months or more. Where the time which elapses between the menopause and the onset of uterine hæmorrhage amounts to a year or more, I think the medical man, once he is aware of the fact, who does not insist on an examination being made by himself or by a specialist is guilty of gross negligence. Such neglect is too common. It is one of the chief reasons why gynæcologists so seldom see malignant disease of the uterus at a stage early enough for radical operation.

To give an idea of the relative frequency of post-climacteric hæmorrhage to the other gynæcological complaints, I may say that out of 470 cases under my care at the Samaritan Hospital for Women during the last three years, 16 were of this kind. These include—9 cases of cancer of vaginal portion, 1 of cancer of cervix and body, 1 of adenoma malignum of body, 2 of cervical mucous polypus, 1 of fibroid, 1 of ovarian cyst, 1 of cystic ovary with chronic pelvic peritonitis. Out of a considerable number in my private practice, I may mention two of adenocarcinoma of the corpus uteri, and one of mucous polypus of the corpus uteri.

Of the nine cases of *cancer of the vaginal portion*, the ages

varied from 47 to 73, viz., two at 47, and one at 49, 54, 55, 56, 59, 60, and 73 respectively. By way of parenthesis I should like to remark that, with regard to the general question of age in relation to uterine cancer, I am inclined to think that teachers are apt to create a wrong impression in students' minds. They insist so strongly on the great frequency of this disease at the menopause, that the student, in many cases, goes into practice with the opinion that this is the only time that cancer is possible. You may think it incredible, but I have been on several occasions assured by medical men, whom I have met in consultation, that a certain case could not be one of cancer because the age of the patient was 35 or under. I have seen two cases in which the age was only 26.

In all the nine cases, with one exception—a case of medullary cancer—the vaginal portion was replaced by a more or less funnel-shaped excavation, with the usual hard nodular edge and the friable bleeding surface. In only two was the disease limited enough to justify the radical operation, and even these two were doubtful. One died a year afterwards from recurrence, but she had less pain and less discharge. The other is still alive, a year and a half subsequent to the operation. She is stouter, and has had neither bleeding nor pain, but the cancer has, unfortunately, recurred.

I cannot but think that Halliday Croom was much too gloomy in his views regarding the prognosis of the radical operation for cancer (*Edinburgh Obstetrical Transactions*, 1899, vol. xxiv). I think infection of the peritoneum, due to the method of operation which he adopted, viz., Doyen's, was possibly the cause of the recurrence and pain in his cases.

In order to determine whether or not the cancerous process has extended into the parametrium, I am accustomed to make a recto-abdominal examination under chloroform. This is the best method of palpation of the parametrium. When infected, this structure is peculiarly unyielding, and often nodular.

It is especially in cases of hæmorrhage due to cancer that early examination is important, because bleeding is generally the only symptom in the first stage. Pain, fœtid discharge, and cachexia are late features, and in most cases do not appear till the disease has advanced too far for operation. In some, unfortunately, hæmorrhage is absent. I have seen several such cases, none early enough for radical operation.

*Cancer of the cervix*—i.e., of the walls of the cervical canal—and *cancer of the corpus uteri* cannot be made out by the finger unless the os be sufficiently patent to allow it to enter.

In such cases it is usually necessary to employ a curette, and submit the scrapings to microscopic examination; but, if the uterus be considerably enlarged, it is sometimes better to dilate the cervical canal, and explore the uterine cavity with the finger. The following are cases in point:—

CASE I. *Carcinoma of cervix and body*.—Mrs. A., æt. 53, was admitted into the Samaritan Hospital on 7th January, 1899. Married twenty-six years; sterile; menopause three years before. Her complaint was bleeding of a year's duration (this she thought was a recurrence of the menstrual periods); also pain in the pelvic region, and foetid discharge for four months and loss of flesh for six months.

*Per vaginam examination*.—Cervix enlarged to about 3 inches in diameter; the lips of the os smooth; the os patent; papillomatous masses felt inside the cervix; parametrium infiltrated.

On 21st January the patient was anæsthetised, the os dilated, and the uterine cavity explored digitally. The cervix was found to be ballooned, and filled with papillomatous masses springing from its walls, which latter were 1 cm. in thickness. The internal os admitted one finger into the cavity of the corpus uteri, which was likewise found to be distended with papillomatous masses, though not to the same degree as the cervix. They were removed with the curette, the walls touched with Paquelin's cautery, and the cavity packed with iodoform gauze. The patient made a good recovery, but was not, of course, cured of her disease.

CASE II. *Adeno-carcinoma of corpus uteri*.—Miss U., æt. 54; menopause eight years ago. In July, 1898, she had uterine hæmorrhage for two weeks. This recurred at monthly intervals from November till January, from which time till the operation in November, 1899, it was almost constant. On examination, nothing abnormal was made out beyond slight enlargement of the uterus. On 2nd November I curetted the uterus, and removed a large quantity of papillomatous material, which on microscopic examination proved to be undoubted adeno-carcinoma. Three weeks later I got the patient into the Central Nursing Home, and performed hysterectomy by abdominal section, first freeing the cervix *per vaginam*, and stuffing both cervix and vagina with iodoform gauze (specimen and microscopic section shown). Owing to cardiac debility, however, the patient did not rally from the operation, and died in forty-eight hours.



CASE III. *Adeno-carcinoma and myoma of corpus uteri.*—Mrs. W., æt. 56, sterile, menopause at 46, complained of constant uterine hæmorrhage from February, 1899. She had lost 8 lb. in weight. On examination, the uterus was felt to be slightly enlarged, and a myoma of the size of a damson was made out at the left cornu. In consultation with Dr. Gibson, I determined to perform hysterectomy by abdominal section. This I did on 7th September in the Training Home for Nurses (specimen shown). The patient made an uninterrupted recovery. She has since gained in weight, and feels well. There is so far no recurrence, and I fully expect the cure to prove permanent.

I have had only one other case of malignant disease of the uterine body. In this case I curetted, and two weeks subsequently performed hysterectomy. Microscopic examination showed that the disease was adenoma malignum.

As showing the importance of curettage before determining on the diagnosis of cancer of the body, I shall next describe a case in which a polypus of the size of a bean was removed with the curette from the neighbourhood of the right cornu.

CASE IV. *Case of mucous polypus of corpus uteri.*—Mrs. B., æt. 65, iii-para, menopause at 45, was seen by me in April, 1898. She was complaining of bearing-down and of uterine hæmorrhage of a few days' duration.

*Per vaginam examination.*—Uterus enlarged, but movable, and walls very little thickened; sound passed  $3\frac{1}{8}$  inches; endometrium rough.

I thought the case was probably one of malignant disease of the uterus, and recommended diagnostic curettage.

At the operation very little was removed in addition to the polypus already mentioned. This was examined microscopically by Dr. Teacher, and found to be a simple adenomatous structure: the glands were greatly dilated, and the epithelial lining of each was composed of a single layer of cells, columnar only in the very small glands, flattened in the others. There was very little interglandular connective tissue. Properly speaking, such tumours are simple adenomata, but the tendency nowadays is to restrict the term adenoma to malignant glandular new formations, and retain for the others the name of mucous polypi of the corpus uteri. (Microscopic section shown.)

The patient has got on well. I have examined her repeatedly since the operation. There has been no recurrence



of the hæmorrhage, and the uterus is now of the size usual at the age of 67.

In the next two cases which I shall report the post-climacteric hæmorrhage was due to *cervical polypus*.

CASE I.—Mrs. M., æt. 48, menopause at 42, was admitted into the Samaritan Hospital in May, 1899, complaining of weakness and loss of flesh. She had had bleeding for one day a month previously.

On examination, a cervical polypus of the size of a grape was felt protruding through the os. It was twisted off, and the uterus curetted. The result was good. There has been no recurrence of bleeding.

CASE II.—Mrs. K., æt. 49, menopause seven months previously, was admitted into the Samaritan Hospital in July, 1899. Her complaint was profuse bleeding for ten days previous to admission. She had had also constant profuse leucorrhœa, and pain in the left iliac region of five years' duration. A small polypus attached to the anterior wall of the cervix was removed by torsion, and the uterus curetted. She had a good recovery, and has remained free from hæmorrhage.

In another case the hæmorrhage was due to a *fibroid uterus*, and was associated with frequency of micturition and pelvic pain. The patient was 53 years of age, and had had the menopause a few years previously. Operation was refused.

In the remaining two cases the hæmorrhage was apparently the result of a *cystic ovary*.

CASE I.—Mrs. A., æt. 51, v-para, was admitted into the Samaritan Hospital in July, 1897. Menstruation had been regular till the end of 1896. Seven months before admission bleeding had begun, and had continued thenceforward, with only a week's intermission now and then. She had also had a good deal of pelvic pain.

On examination, an ovarian cyst of the size of an eight months' gravid uterus was discovered.

On 10th July the uterus was curetted, but very little endometrium was removed. The sound passed  $2\frac{3}{4}$  inches. Twelve days later ovariectomy was performed. Both ovaries

were removed, as both were found cystic; the smaller was of the size of a Tangerine orange.

The patient made a good recovery, and has remained well. There has been no recurrence of the bleeding.

CASE II.—Mrs. D., æt. 52, menopause several years previously, was admitted into the Samaritan Hospital on 14th February, 1898, complaining of pain in the left iliac region, and of blood-stained vaginal discharge of three months' duration.

On examination, the uterus was found to be retroflexed and adherent, but small, and the left ovary was cystic. She refused operation, and left the hospital in a few days.

In this paper I have gathered together examples of many of the causes of post-climacteric hæmorrhage. What I wish especially to urge is the importance, in all such cases, of an early bimanual examination, to be followed, if necessary, by diagnostic curettage.

#### IV.—DEMONSTRATION OF PATHOLOGICAL SPECIMENS FROM GYNÆCOLOGICAL CASES.

BY DR. J. K. KELLY.

Dr. Kelly exhibited a series of pathological specimens taken from cases in his wards in the Royal Infirmary.

#### MEETING VIII.—2ND FEBRUARY, 1900.

*The President, MR. H. E. CLARK, in the Chair.*

#### I.—CASE OF VOLKMANN'S ISCHÆMIC PARALYSIS.

BY DR. RITCHIE THOMSON.

Dr. Thomson showed a little girl, aged 4 years, who first came under his notice early in December, 1899, with a dislocation backwards of the right fore-arm bones. He put up the limb in the extended position, and gradually altered this to one of flexion at a right angle. He used poroplastique as a splint, but left off all apparatus at the end of three weeks.

During this time passive movements were performed daily. The fingers assumed the flexed position early in the course of treatment, and he was subsequently unable to straighten them. There was considerable effusion in front of the elbow, which he then thought might be due to rupture of the main artery, but as time went on, the swelling appeared to be situated in the substance of the flexor muscles. Implication of nerve trunks was not demonstrable so far as anæsthesia was concerned.

The hand was livid and much colder than its fellow, and the thumb and fingers were firmly flexed in the palm. They could be extended in a certain degree by flexing the wrist.

He considered the case one of ischæmic paralysis, and referred to a paper in the *Lancet* of 13th January, 1900, by Mr. Page. He would recommend tendon-lengthening by way of treatment.

## II.—CASE OF CRETINISM.

By DR. ROBERT KIRK.

This case was shown to illustrate the effects of thyroid treatment since March, 1899, when the patient was previously presented to the Society.

## III.—AN ISOLATED CASE OF FRIEDREICH'S ATAXIA.

By DR. JAMES CARSLAW.

The patient whom I have brought before the Society first came under my observation at the Western Infirmary Dispensary more than a year ago. He has been examined repeatedly since, and no change has taken place in his condition during that time. It is a case which presents considerable difficulty in diagnosis, and does not by any means correspond accurately with the typical cases of Friedreich's ataxia, though I have ventured to give it that name.

J. M'K. is 20 years of age, and a clerk. His complaint is of some loss of sensation in his fingers, and an inability to use his hands without seeing exactly what he is doing; also of some unsteadiness in his gait. This condition dates back as long as the patient can remember, and he has always had difficulty, for example, in putting on his clothes, and even yet has to be assisted with anything that he cannot actually see. He does not recollect ever having subjective sensory disturbance of his hands or feet. He has had no vertigo, no gastric or other crises, no headache, no pain in his back, no affection of

his speech, nor paralysis of limbs. He has had no shooting pains in his limbs nor spasmodic movements.

Nearly ten years ago the patient was for some months in Professor M'Call Anderson's ward in the Western Infirmary, and at that time he was suffering from irregular jerky movements of his body and his limbs, and also of the head, this having first developed at the age of 8. At this time he was discovered to have some ataxia of both upper and lower limbs, some anæsthesia, especially of the lower limbs, and absence of knee-jerks, but no eye symptoms. About five or six years ago the patient was discovered to have developed some curvature of the spine, which has become only slightly more prominent since.

Though never robust, the patient has had but little illness apart from his present nervous symptoms. There is no story of convulsions in childhood. At the age of 13 he went to work in an office, and has been with the same firm ever since, able to do the usual amount of work as a clerk, and not much inconvenienced by his nervous condition. Indeed, he can write remarkably well, though he must always see what he is doing, and he has even learned to play the piano.

There is a complete absence of nervous illness in any other member of his family, of which he is the youngest. His father was alcoholic, a sea captain, and was drowned at the age of 40, when the patient was an infant. He is said to have been a strong, healthy man, and no history of syphilis can be traced. His mother, aged 55, is healthy and well. Of a family of seven, five are alive and healthy; one died in infancy of "teething." Two sisters are married, and have healthy children. His father had only one sister, who is married, but with no family, and in good health. His mother had only one brother, who is healthy, married, but also with no family. There is no story of any kind of nervous disease in any of his relations.

The patient is of small stature, and rather thin. He has a prominent curvature of the spine, lateral and posterior, and a corresponding deformity of the thorax. There is no pain in the back or limbs. His intelligence is very good, his speech natural, and the special senses all good. The pupils are equal, and the reflexes to light and on accommodation are normal. The visual acuteness and the field of vision are normal, and ophthalmoscopic examination reveals nothing abnormal. At times there is seen a very little nystagmus. There is no strabismus, no facial paralysis, and no deviation of the tongue. The teeth are good and well developed. There

is no paralysis of arms or legs, and no tremors, though some irregular movements of the body and limbs are seen during examination. There is marked deficiency of the sense of touch in both the upper and lower limbs. The anæsthesia extends from the elbow downwards and from the knee downwards, rather more marked on the right side, and most profound in the distal parts. There is with the same distribution less definite analgesia, though the sensation of heat and cold is fairly good. The muscle sense, at least in the hands, is practically gone. As to reflexes, the plantar are both present slightly, the cremasteric is present, but the knee-jerks are quite absent. There are no reflexes got on the arms. There is no disturbance of the bladder or rectum. There is no wasting of the muscles or other trophic change. There is ataxia in both upper and lower limbs, which is easily demonstrated in the usual way, but not sufficiently pronounced to prevent him going about freely and doing an ordinary day's work.

In other respects the patient appears to be quite healthy, examination of the heart, of the lungs, of the digestion, and of the urine revealing nothing amiss.

The principal features of this case to which attention is drawn are, first, its occurrence as an isolated case of nervous disease, which, however, has come on in early life, at least, as early as the age of 8. Secondly, there is nothing in the patient's condition or in his family history to suggest hereditary syphilis. Thirdly, his prominent symptoms are the spinal curvature, loss of deep reflexes, also considerable sensory disturbance and ataxia, both of which are well-marked in the upper limbs as well as in the lower. Fourthly, one would notice certain negative facts—the absence of disturbance of the speech, the absence of eye symptoms (unless, perhaps, some slight nystagmus), the absence of pain in the back, of girdle sensation, of pains shooting through the limbs, and of bladder disturbance.

The case presents considerable resemblance to both locomotor ataxia and Friedreich's ataxia, both of these diseases being characterised by loss of knee-jerk and ataxic phenomena. It differs from locomotor ataxia, however, in many respects, principally the early age of onset and the absence of characteristic eye symptoms. It differs, too, from the typical cases of Friedreich's ataxia in its occurrence alone in a family, in the absence of the characteristic speech, in the absence of any deformity of the hands or feet, and in the presence of such definite sensory disturbance which is usually absent in



this disease. The comparatively satisfactory condition of the patient after so many years of symptoms is also unusual. However, I am inclined to place this case under the heading of Friedreich's, or hereditary, ataxia, recognising that this disease, like syringomyelia and disseminated sclerosis, may present considerable variation from the usual type. No doubt in this case there is a lesion in the posterior part of the spinal cord, probably a developmental lesion of a somewhat different pathology from the spinal sclerosis of locomotor ataxia.

*Dr. Hinshelwood* agreed with *Dr. Carslaw* as to the case being one of Friedreich's ataxia, and he considered that it could not be classified otherwise. He attached great importance to a careful examination of the eyes in this disease.

*Dr. W. K. Hunter* said that he had been very much interested in this case, and that it reminded him of a somewhat similar one reported by Professor Raymond, of Paris, in *Le Progrès Médical* for August, 1897. In discussing his case, Professor Raymond said that locomotor ataxia beginning in childhood was exceedingly rare, and that he could not find the records of more than six undoubted cases. He did not class his patient as such, neither did he consider it as certainly a case of Friedreich's disease. He said it was a "hybrid," with some of the characters of both these conditions. Such "hybrids," he says, are sufficiently numerous to form a subdivision by themselves.

*Dr. Carslaw* replied.

#### IV.—CASE OF EXOPHTHALMIC GOITRE WHICH IMPROVED UNDER TREATMENT WITH ANTIPYRIN.

BY DR. JAMES HINSHELWOOD.

The patient shown to-night as manifesting great improvement under treatment with antipyrin was previously before the Medico-Chirurgical Society on 18th November, 1898, and her case is reported in the *Transactions* (vol. ii, p. 222). The patient, a young married woman of 24 years of age, was shown as an illustration of the early occurrence of eye symptoms in exophthalmic goitre. She had presented herself at the Eye Infirmary owing to the disfigurement produced by the prominence and staring appearance of the eyes. There were present also, besides marked exophthalmos with Stellwag's and Von Graefe's symptoms, great

nervousness, tachycardia, pulse 120 to 132 per minute, and slight fullness of the thyroid.

The patient was put upon gradually increasing doses of antipyrin, beginning with 5 grains thrice daily, and increasing gradually up to 30 grains thrice daily. There was a steady improvement in her condition, and a gradual disappearance of the symptoms. The staring and disfiguring prominence of the eyes, for which she sought relief at the Eye Infirmary, has disappeared. When asked to look downwards there is still perceptible a slight lagging behind in the descent of the left upper lid, the only trace of Graefe's symptom still present which was present at the onset in both eyes and in a marked degree. The tachycardia has disappeared, and the patient's pulse is generally about 70 per minute. The extreme nervousness has gone, and the patient expresses herself as feeling quite different. There is no swelling of the thyroid.

The patient is practically cured, and for several months she has expressed herself as feeling quite well. She has continued to attend the Eye Infirmary at my request, as I wished to diminish gradually the dose of the antipyrin instead of dropping it suddenly, and I was also desirous of keeping her under observation.

On the 18th March, 1898, I showed to the Medico-Chirurgical Society a case of exophthalmic goitre with unilateral eye symptoms. This case is reported in the *British Medical Journal*, 25th June, 1898. Here, too, under gradually increasing doses of antipyrin, there was a gradual improvement in the patient's condition, with complete disappearance of all her symptoms.

I have thus shown to the Society, within two years, two cases of this disease cured after treatment with antipyrin. The question arises—Was the gradual improvement in these cases due to the administration of the antipyrin? Although the basis of experience is a narrow one, the observed facts tend in this direction.

We know from clinical experience that cases of exophthalmic goitre recover spontaneously, and that occasionally the patients become cured without any drug treatment whatever. We must, therefore, be very careful in dogmatising on the beneficial effects of any drug until we have had a very wide experience of it. In the two cases brought before the Society, however, the improvement set in so promptly after the administration of the antipyrin, and continued so steadily, that it is difficult to resist the conclusion that the cure was due to the administration of the antipyrin. We must wait

further opportunities before speaking more dogmatically on the subject.

It will be observed that, in these two cases, the symptoms of the disease were slight; in fact, the patients were not aware of anything beyond the disfiguring appearance of the eyes. My impression is that cases in this early stage are much more amenable to treatment by drugs, and it is in such cases I would recommend the antipyrin treatment. Unfortunately, cases at this early stage are rarely seen by the physician in the general hospitals. When there is great enlargement of the thyroid, and the general symptoms are well pronounced, there is less probability of getting favourable results from the administration of drugs.

Great differences of opinion exist as to the etiology, pathology, and treatment of this disease. From a very careful study of the eye symptoms, I have been led to the conclusion that the changes producing these are in the oculomotor nuclei, and, from the negative evidence of pathological anatomy, that the disturbance is one of function and of the nutrition of the nerve elements, as in epilepsy and chorea. In these latter conditions, the treatment by antipyrin has been very successful, and hence, regarding exophthalmic goitre as a disease of the same class, it was hoped that the same favourable results might be got from its administration.

Although our experience of it is as yet too limited to draw dogmatic conclusions, still, the very favourable results obtained in these two cases should encourage us to give this drug a thorough trial in suitable cases. The cases I consider suitable are those in the early stage, when there is but little enlargement of the thyroid, or, better still, when there is no thyroid enlargement at all. By thorough trial, I mean that the drug must be pushed in large doses. This can be done with safety if the dose is increased very gradually and the patient kept under careful observation. In the cases here recorded, the dose was gradually increased from 5 up to 30 grains three times daily, without any unpleasant or alarming symptoms supervening.

#### V.—CASE OF ARTIFICIAL ANUS FOR MALIGNANT DISEASE OF THE RECTUM WHERE CONTROL WAS OBTAINED OVER THE EVACUATIONS.

BY MR. A. E. MAYLARD.

The usual abdominal incision for exposing the sigmoid flexure and lower part of the descending colon was made in

the left groin. The bowel, having been secured, was well drawn out of the wound to the utmost extent admitted, the "slack" being well taken in both from above and below. A second incision was now made about 3 inches external to and above the first incision. This divided the skin, subcutaneous tissue, and about half the thickness of the muscle wall. By means of the finger a passage was burrowed beneath the musculo-cutaneous bridge, of sufficient size to admit of the loop of bowel being drawn through and out at the second incision. When withdrawn through this aperture, it was secured by a glass rod passed through the mesentery. In about a week's time the protruding loop of colon was excised, although an opening had been previously made in the prominent end of the loop to allow of the escape of gas.

So far it will be seen that the operation resembles in performance Frank's method of performing gastrostomy, and Albert's method of jejunostomy, where, in both instances, the conveyance of the viscus beneath a musculo-cutaneous bridge has the object of restraining the escape of material from within.

This, however, in the case of the colon, does not unaided effect this desirable result, for without some mechanical aid the patient by no voluntary effort can prevent the escape of fæces, for the very good reason that, until the fæces are escaping from the orifice, he has no knowledge that his bowels are moving.

To overcome, therefore, this difficulty, a double spring-pad truss is employed. The anterior pad presses upon the musculo-cutaneous bridge, and, therefore, upon the oblique canal through which the gut passes. It checks the escape of fæces, but does not prevent the passage of flatus.

The truss is not meant for continuous use, but only for such periods as the patient may desire to be free from the possible escape of evacuations.

The operation, to be successful, needs a tolerably free colon, for unless a loop of gut can be withdrawn, it is not possible to perform the operation by this method. In the case previous to this one, where the attempt was made, it was found impossible, owing to the shortness of the meso-sigmoid and meso-colon, which would not allow of a loop being withdrawn from the abdomen.

## MEETING IX.—16TH FEBRUARY, 1900.

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DR. WALKER DOWNIE *in the Chair.*

## I.—TWO CASES OF ABSCESS IN FRONTAL LOBE OF BRAIN.

BY MR. R. H. PARRY

The principal facts gathered from the report of two cases which were under observation for a considerable period, supplemented by a few general statements on points of interest, are submitted as follows:—

I. *Cause.*—A clear history of injury was obtained in both cases. The first patient, a boy, fell on a brick, and when brought to hospital two months later there was a discharging sinus near the right frontal eminence, at the bottom of which small fragments of the brick were found embedded in the bone.

The second patient received her injury through falling on the pavement, and the wound, in this case just above the left frontal eminence, suppurated, and the bone necrosed; but the parts were quite healed when she came under observation three months later.

In respect of cause and the extra-cranial disturbances, these cases may be given as typical examples. Abscess in the frontal lobe is invariably associated with injury and with suppuration in the scalp wound; in some instances the damage to the external parts is slight, and healing proceeds uninterruptedly. The progress of the infective microbes from an incised, punctured, or lacerated wound of the scalp to the white matter of the brain is usually slow, and a series of complications develop before symptoms of the graver lesion become manifest. These are—inflammation of the diploë, necrosis of external and internal tables, pachymeningitis with formation of a varying amount of pus, and encephalitis.

The presence of pyogenic microbes in the wound, and the appearance of complications in a fairly definite order in contiguous structures, afford strong evidence of infection from without inwards. The primary advantage which follows



acceptance of this view is the prominence given to preventive treatment; and the teaching now generally accepted, relative to the dangers attendant on a discharge of purulent matter from the middle ear, might also be applied to suppuration in a wound on the vertex. In discussing, however, the various causes and the prevention of traumatic abscess of brain, a word must be said on the damage to the brain-tissue, as the immediate result of the injury.

Laceration is, I believe, a fairly common occurrence in head injuries in children, and when associated with a septic wound of the scalp it becomes an important factor in the causation of a cerebral abscess. In cases where the damage to the external parts was trifling, and where no local disturbance followed the injury, yet a cerebral abscess developed in the course of months or years, further evidence would seem to be forthcoming of the part played by laceration. When a history of concussion, however slight, is obtained, with a punctured or contused wound of the scalp, the treatment should be directed to a highly probable intra-cranial damage as well, and rest should be insisted on for weeks.

A careful study of temperature and pulse records in the Children's Hospital has convinced me that the effects of a severe blow on the head do not pass for some time.

II. *Age.*—The respective ages of the patients were 4 and 5 years. Traumatic abscess is more common than any other form in childhood, and in a list of twelve cases the age was under 11 years.

III. *Latent period.*—It will be apparent, from the following report of one of the cases which was under observation for ten weeks, that between the appearance of complications in the wound, and that of definite symptoms of abscess-formation, there was a considerable period which may best be described as the latent period.

The case of the girl is also of interest from the fact that an opportunity is so rarely afforded of watching the progress at this period; and, further, that the symptoms simulate closely those of tubercular meningitis. As already noted, the wound was healed when seen on 17th March, 1899, three months after receiving the injury; but it broke down shortly after admission, and advantage was then taken to explore it thoroughly. Nothing being found in the sinus to account for the œdema and tenderness about the wound, the bone was gouged and the dura mater exposed, when it was observed to

be quite normal, and the brain pulsations strong and distinct. The general condition was good, and, except when suffering from occasional frontal headache, the patient was bright and lively. The temperature, taken every four hours, on four occasions registered  $97^{\circ}$ , and on one occasion  $101^{\circ}$ , the average being  $99^{\circ}$ . A slight rise took place after the exploratory operation, and it was noticed that the wound was somewhat slow in healing, although the tenderness and œdema had disappeared. In the course of two or three weeks the temperature became practically normal, and remained so until she was dismissed on the 9th May, after having been in hospital for nearly eight weeks. The pulse, also taken every four hours, was never below 88, and was as high as 136, the average being 105. On dismissal, the wound was healed, the tenderness gone, and there was no complaint of pain.

She was readmitted on the 25th August, the wound having again reopened, and on examination the parts were found to be tender and inflamed, and pus was seen exuding from the sinus. During the eighteen days she was detained in hospital, the temperature remained quite normal, and the wound healed under simple treatment. The question of intra-cranial mischief was discussed. There was an occasional attack of vomiting, headache, and at times a degree of irritability pointing to a probable extension of the inflammatory changes to the brain or its membranes.

Careful examination and observation failed to reveal the presence of symptoms of brain abscess, and, as her condition seemed satisfactory, she was sent to the convalescent home, where for twelve days she appeared well, and was able to amuse herself with the other children; but on the thirteenth day she was seized with vomiting and severe pain in the head, she became very drowsy, and it was only with difficulty that she could be roused. On the following morning she was sent back to the hospital, and three days later 3 oz. of pus were removed from the brain.

In the second case no reliable history could be obtained, and the patient was operated on a few hours after admission.

IV. *Symptoms of abscess.*—These may, for convenience of description, be divided into two groups:—

1. *Symptoms of intra-cranial pressure.*—These were headache, vomiting, optic neuritis, drowsiness, coma, Cheyne-Stokes' respiration, slow and irregular pulse, and slight elevation of temperature. There was no history of rigors, yawning, or hiccough.

2. *Symptoms indicating the probable seat of the abscess.*—A scar in one case and a sinus in the other were unquestionably valuable guides, and in the majority of cases the abscess has been found in the immediate neighbourhood of the damaged bone. Paralysis of the facial muscles on the opposite side, accompanied by paralysis of the levator palpebræ and internal rectus on the same side, was the next and the most important symptom, and the appearance of which, followed by a series of convulsive movements affecting the muscles on both sides of the body, but not in any definite order, and terminating, in one of the patients, in a violent tonic spasm of the muscles of the back, as well as those of the extremities, convinced me of the necessity for immediate operation. During the fit the pupils were widely dilated, and after it had passed off the facial paralysis was more pronounced.

V. *Operation.*—The details of the operations were practically the same in both cases. Chloroform was the anæsthetic used. An incision was made over the cicatrix and a disc of bone removed, when the dura mater bulged out through the opening, but it was observed that the brain pulsations were absent. An incision was then made into the dura mater, when the brain tissue immediately forced its way through, and had for a moment to be kept back by the pressure of a pad of gauze. The brain was then explored, when the abscess was reached at a depth of about  $\frac{3}{4}$  in. A drainage-tube was introduced, and from 2 to 3 oz. of foul-smelling pus flowed away freely. The cavity was irrigated with boracic solution, and the lining membrane gently removed with a small spoon. At this point, in one case, there was a sudden reappearance of pus, which seemed to indicate that a part of the abscess had not been reached owing to collapse of the walls of that already dealt with, and further exploration released about a dessert-spoonful of pus.

Rubber drainage-tubes were inserted, iodoform and boracic dusted over the wound, and a dressing applied.

Marked improvement followed the operation, and within a few hours the patients were conscious and able to give intelligent answers; but in one case, that of the boy, it was found the sight was gone. Pus continued to escape through the tubes for a few days, but it gradually ceased, and the wounds closed in the course of two or three weeks. There was a distinct elevation of temperature for about a fortnight after operation, and the pulse remained over 100; it was not

till about the fifth week that recovery seemed to be fairly well established. The boy gradually regained vision in the eye on the opposite side from that of the abscess, but no improvement took place in the other. He has since been under treatment for epilepsy; otherwise his condition has remained satisfactory. The girl made a perfect recovery, and when seen nine months later was still in excellent health.

## II.—SERUM-PROGNOSIS IN ENTERIC FEVER.

BY DR. WM. SCOBIE.

The following principles seem to lie at the foundations of any valid doctrine of serum-prognosis.

In the first place, the agglutinating curve is not meant to supersede other elements of prognosis. No less weight is to be attached to the condition of the cardiac muscle, the lungs, the nervous system, and to the course of the temperature. But the condition of the blood-serum probably lies as near the root of the matter as any of these, and any information that can be got regarding it has an equal right to be carefully weighed.

In the second place, the agglutinating curve gets its prognostic value only when taken in close conjunction with the other elements of prognosis. Some estimate of the gravity of the case is required before the element of serum-prognosis gets its value. There are, indeed, some forms of agglutinating curve from which one might approximately reconstruct the history of the case. But in the most trifling forms and the most hopeless forms the agglutinating curve is very similar, and is of no prognostic value apart from a knowledge of the case.

In the third place, the working principle of serum-prognosis is to satisfy oneself whether the hypothetical reaction of defence represented by the agglutinating power is insufficient, sufficient, or superabundant. In a profoundly prostrated case an agglutinating power never rising above 1 to 100 means a very insufficient reaction of defence. In a case with trifling symptoms the same agglutinating curve means nothing. In a sharp case, where the agglutinating curve runs rapidly up to a high figure about the time when the tide may be expected to turn, the progress is, in absence of complications, almost certainly favourable. If we have regard, not to the agglutinating power absolutely, but to its proportion to the severity of the attack, serum prognosis will not be found at fault. It



may not be an accurate gauge of the course of individual symptoms, or of the duration of the acute stage; but it is an accurate gauge—due allowance being made for complications—of the safety of the patient.

The investigation on which those conclusions are based was commenced on 1st November, 1898, and carried on until one hundred consecutive cases had been examined. In the detailed presentation of these cases a fourfold classification was adopted.

The first class consisted of 14 fatal cases. Special importance was attached to two of these cases, as having run their course without any complication. In both cases the symptoms were severe, and the agglutinating power never rose above 1 to 100. In other 3 fatal cases a similar agglutinating curve was observed, but in them complications had some share in determining the fatal issue. The remaining 9 cases were complicated by perforated peritonitis, intestinal hæmorrhage, or pulmonary affections. The serum-prognosis was not in itself bad, but was largely overborne by the gravity of the complications.

The second class consisted of 73 ordinary cases of recovery. Some of these cases were of unknown duration, or were admitted at a late stage, and in these serum-prognosis was sometimes of small value from the agglutinating curve being missed at the critical point. Some cases were so manifestly benign as to make serum-prognosis superfluous. Some cases were ambiguous as regards serum-prognosis, the balance of infection and reaction being so even as to make it impossible to say which was likely to prevail. But after all such eliminations had been made, there remained quite a large proportion of cases in which the serum-prognosis was quite pronounced, and was of great value. In a case of typically good serum-prognosis, the agglutinating curve will be found rising through the second and third weeks, and reaching a high figure about the end of the third week. In such a case the symptoms may be very severe, and the case may clinically be a very bad one. Yet with great regularity such cases become well.

The third class consisted of 10 cases in which a relapse occurred. Some authors think that it is possible from the agglutinating curve to forecast relapses, or at least to select a class of cases in which all, or almost all, relapses are to be found. But, *à priori*, it is much more probable that relapses depend on the condition of the organism as regards immunity, which is quite independent of agglutination. And, appealing



to experience, these 10 cases presented no characteristics, as a class, to mark them off from cases of the preceding class. They illustrated over again the remarks made about ordinary cases of recovery, but they gave no hope of attaining to a method of forecasting relapses.

The fourth class consisted of 3 exceptional cases in which a diagnosis of enteric fever seemed fully warranted, and yet no agglutinating reaction was at any time found. The bearing of such cases need not be discussed here.

A consideration of all those cases seemed to fully warrant the conclusion that the course of the agglutinating curve is a most important factor in the prognosis of enteric fever, frequently eliminating surprises, and enabling one to see days farther ahead than he could without its aid. And if some form of serum therapeutics should come to be adopted for enteric fever, the observation of the agglutinating curve will probably find its chief importance as an indication for this form of treatment, and a gauge of its success in each individual case.

Dr. Scobie submitted a series of charts illustrative of the conclusions stated above.

On the chart the lower curve in red represented the agglutinating power. In all cases serum got by blistering was used; the time allowed was two hours, and the reaction point was the highest point at which agglutination was found. The figures at the left side of the chart represented the degrees of dilution—1 to 100, 1 to 200, &c. The great variation in the agglutinating power in different cases made it impracticable to use the same scale throughout. In some charts the scale rose by intervals of 1,000, in others by intervals of 100.

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## MEETING X.—16TH MARCH, 1900.

DR. J. WALLACE ANDERSON *in the Chair*.

### I.—A CASE OF HEMIPLEGIA, WITH SPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT.

BY PROFESSOR M'CALL ANDERSON.

M. B., æt. 45, riveter, was admitted to Ward II of the Western Infirmary on 15th December, 1899, having lost power of his left side four days previously.

*Family history.*—Owing to his present condition it is impossible to get an exact history; but, so far as his friend knows, it appears to be unimportant, except that he has been much addicted to alcohol.

He seems to have enjoyed good health, with the exception of inflammation of the right lung some years ago.

*History of present attack.*—Four days ago, when attempting to rise from bed, he found that he was unable to do so, owing to loss of power in his left side.

*Present condition.*—There is complete loss of power of the left arm and leg, patient being unable to move a finger or a toe. He answers questions in a slow and somewhat hazy manner. The tongue is protruded slightly to the left side. He does not appear to have difficulty in drinking fluids. The pupils are equal. Reflexes are present, but deficient. Sensation is not impaired. There is slight enlargement of the inguinal glands, and a coppery stain on the right shin. There is no definite history of syphilis, but patient states that he contracted gonorrhoea sixteen years ago.

The treatment was commenced on 20th December. It consisted of 10 grains of iodide of potassium three times a day, this being gradually increased till on 4th January 120 grains were given three times a day. By 31st December patient was very much improved, and on 31st January he was dismissed quite well. The diagnosis was that of a gumma pressing on one of the cerebral arteries.

*Dr. Adamson* suggested that the rapidity of the recovery in this case pointed rather to embolism than to syphilis.

*Prof. M'Call Anderson*, in reply to *Dr. Howie*, said that no drug was given along with the iodide of potassium to prevent iodism.

## II.—CASE OF CHOREA, WITH SPECIAL REFERENCE TO TREATMENT.

BY PROFESSOR M'CALL ANDERSON.

A. M'V., æt. 9, admitted on 15th January, 1900, to Ward VII complaining of irregular movements of the body, head, and limbs, and pains in the back and legs—the former of two years' duration in all, and the latter of four months.

*Family history.*—Her father, mother, two sisters, and one brother are alive and well.

*Previous illness.*—She had measles when 2 years of age, otherwise she has enjoyed good health. She is considered to be of a nervous temperament.

*Present complaint.*—Two years ago she began to have irregular movements of the arms and legs, especially on the right side. They did not occur when she was asleep. She was taken to the Children's Hospital, where she remained for four months, and on leaving she was quite able to walk, though there were still some jerking movements present. She was sent to the country for two months, and was quite well on her return.

About fifteen months ago she was sent back to school, when the irregular movements again soon returned, and have persisted ever since.

For the last four months she has also complained of pains in the back, legs, and chest.

On admission the chorea was very marked. She requires assistance to walk, and has to hold on for support when standing. Two nurses are required while washing her in order to keep her steady. She has difficulty in speaking, and has to be fed.

*Treatment: 17th January.*—Rest in bed.

*22nd January.*—Antipyrin, 5 grs. in the day, increasing by 5 grs. in the day.

*31st January.*—Antipyrin, 50 grs. in the day.

*13th February.*—Antipyrin, 100 grs. in the day.

*8th March.*—Antipyrin, 130 grs. in the day.

*15th March.*—Antipyrin, 135 grs. in the day.

Recovery was complete.

### III.—TWO CASES OF GASTROSTOMY.

By DR. WALKER DOWNIE AND DR. ROBERT KENNEDY.

CASE I.—The patient was a married woman, aged 30, who had been seen at irregular intervals by Dr. Walker Downie at the throat department of the Western Infirmary. She was admitted to the Infirmary on his recommendation on 6th June, 1899. On Christmas Day, 1897, she had first experienced difficulty in swallowing. On that day a bolus of food had become impacted in the gullet, and it had to be dislodged by the use of an œsophageal bougie. From this time on she had more or less difficulty in swallowing, and during the two months prior to admission she could swallow fluids only, and in very insufficient quantities. She had been, as a consequence, gradually losing flesh, and on admission she was emaciated and extremely weak.

No bougie could be passed through the strictures, each

being suddenly stopped in its progress at a distance of 7 ins. from the upper incisor teeth.

Early in 1897 she became hoarse, and this huskiness had persisted. On laryngoscopic examination, prior to admission, the left vocal cord was found to be fixed in the cadaveric position, while the movements of the right cord were free and normal.

To avert death from starvation, gastrostomy was agreed upon.

On 22nd June, 1899, Dr. Kennedy performed gastrostomy by Frank's method. After the operation, which was not followed by any shock, the patient was fed by nutrient enemata until the fourth day, when the stomach was opened by a small incision, and a tube introduced. From this time onwards the patient was fed entirely through the tube with peptonised milk, beef-tea, eggs, soups, &c. She was dismissed from hospital on 15th July, having learned to pass the tube herself. At this time she weighed 7 st.  $\frac{3}{4}$  lb.

At no time has there been leaking from the stomach, and there has been no eczema of the surrounding skin. The patient's nutrition has improved, and on 30th November she weighed 7 st. 13 $\frac{3}{4}$  lb., having thus gained 13 lb. since the operation. It is now about nine months since the operation, and for some time the patient has worn a tube in position on account of the increasing difficulty of introducing it at meal times. The patient has been able for some time to follow her occupation, that of a laundress.

CASE II.—Agnes A., unmarried, aged 32, was admitted to the throat department of the Western Infirmary on 8th December, on account of pains in the throat and difficulty of deglutition. Early in March, 1899, she first experienced pain in the right side of the neck, immediately behind the thyroid cartilage. The pain was of a gnawing character, and was occasionally increased by the act of swallowing. In October—seven months later—she became aware of a difficulty in getting food over, and at the time of admission to hospital soft food alone could be swallowed. The passage of a No. 6 bougie caused considerable pain. Its passage was obstructed at 7 $\frac{1}{2}$  ins. from the upper incisor teeth; but, by a little pressure, it passed beyond the obstruction and into the stomach. The bougie on removal was streaked with blood. She had numerous scars on each side of the neck, which marked the site of former extensive glandular suppuration. This, along with her age, her florid complexion, and the course

of her temperature, led us to consider the œsophageal ulcer to be probably of a tubercular nature, and not epitheliomatous; and this opinion was apparently confirmed by the finding of tubercle bacilli in the discharge removed from the lower part of the pharynx.

On 20th January, 1900, Dr. Kennedy performed gastrotomy in order to enable alimentation to be carried on, and to relieve the patient from the pain always associated with attempts to swallow food. The method of operation was Witzel's, and the patient made a good recovery from the operation. She was nourished during the first day by nutrient enemata, but on the day after the operation feeding by the tube was commenced. This was gradually increased, and there was no trouble with the digestion. During the six weeks that the patient lived, feeding was carried on regularly. There was no discomfort from the administration of food, which was freely given, and the great pain and distress in the gullet formerly experienced entirely disappeared.

At the *post-mortem* examination the stomach was found contracted to half its normal capacity, and firmly adherent to the abdominal wall over an area about the size of a half-crown piece. The passage from the skin to the stomach was about  $1\frac{3}{4}$  in. in length, and extended from the skin obliquely downwards to the stomach.

#### IV.—LECTURESHIPS ON TRADE DISEASES.

BY DR. JAMES W. ALLAN.

In 1700, Bernardino Ramazzini published a work entitled "*De Morbis Artificum Diatriba*," and this book is a memorable one, not only as giving the subject of trade hygiene a concrete form, but as furnishing a mine from which subsequent literature was largely borrowed.

We must honour the memory of this father in industrial hygiene, and gratefully recognise the services which he has rendered. But it is obvious that the subject is one which is continually undergoing change; old industries die out, new industries spring up, and those which persist undergo gradual modification.

For this reason old books on industrial maladies, while invested with much interest, do not possess much practical value.

As manufactures change, the diseases connected with them alter.



The study of the hygiene of occupation must necessarily keep in close touch with the latest developments of manufacture, in order to be of any real service.

On referring to medical literature we find that the subject has received much more study in France and Germany than in this country. This is somewhat strange, seeing that we are a manufacturing nation. But while we are behind our Continental neighbours in this matter, it does not follow that the subject has been entirely neglected in this country. We have the splendid work of Sir John Simon and his fellow-labourers in the Local Government Board, and that of many others, among whom may be mentioned Dr. Arlidge, who died the other day, but left us his well-known book on *The Hygiene, Diseases, and Mortality of Occupation*. And, as Aldridge points out, while the Continental authorities have greater powers, and their workmen are more submissive than ours, yet this country has the advantage of factory laws which are better administered. And on this good administration we may congratulate ourselves. It does not matter how good regulations may be, if they are not carried out.

My object in coming before the Society to-night is to urge the practical study and teaching of the diseases incidental to the various industries of this country.

In my presidential address to the Glasgow Southern Medical Society (published in the *Glasgow Medical Journal* for December, 1897), I took the occasion to advocate the visiting of public works, and to point out the importance of medical men acquiring some knowledge of the occupations of those who came under their professional care. One such visit was made during my tenure of office, and I can testify that it was much appreciated; it was a success, but I do not know that it has been followed up.

I recently published a letter in the *Lancet* and *British Medical Journal* (for 10th June, 1899), urging the establishment of "Lectureships on Trade Diseases."

As this letter contains my arguments in brief, perhaps I may be permitted to quote it:—

We are having schools of instruction in 'tropical diseases' established in London and Liverpool, while lectureships on that subject have been instituted in Edinburgh and elsewhere. All this is very satisfactory. As a maritime and colonising people, and as the holders of tropical possessions, it is essential that our medical men should have every facility for acquiring a practical knowledge of the maladies prevalent in hot countries. But while congratulating ourselves on this

important step, which has so direct a bearing on our interests abroad, I think it would be well to give some attention also to a matter which lies nearer home. I refer to the providing of instruction in regard to diseases arising from, or aggravated by, the industrial pursuits of our British people. We are a maritime people and a colonising power, but we are also, and, first of all, a manufacturing people. Our position in the world, our wealth and our power, essentially depend on our skill and capacity as manufacturers. Our possessions abroad afford markets for our goods, and our ships convey them thither; but at the root of all lies the making of these goods. And, therefore, the health and well-being of those engaged in industrial pursuits is to us, as a nation, a matter of prime importance.

"So far as I am aware, there is no lectureship or special course of instruction given on 'trade diseases' in this country.

"I am aware that the subject falls under the heading of 'Hygiene,' and that it is dealt with as a part of 'Public Health,' and it may be argued that this is provision enough. I do not think so. As well may it be contended that 'tropical diseases' fall under the heading of 'Practice of Medicine,' and that, therefore, special courses on that subject are unnecessary. My proposal is that special lectureships on 'trade diseases' should be instituted at the medical schools in our large manufacturing towns, and that these lectures should be illustrated and supplemented by visits to factories and public works. These visits would afford valuable object-lessons to the young students of *Æsculapius*, not only contributing to their medical education, but widening and deepening their knowledge of the life-conditions of the labouring classes, and giving them some idea of the wonderful skill and energy which have placed us where we are as a nation."

The result of this appeal was distinctly disappointing. So far as I am aware, the matter attracted no public attention.

I had, however, the gratification of receiving the approval and encouragement of H.M. Chief Inspector of Factories in the following letter:—

"H.M. CHIEF INSPECTOR OF FACTORIES,  
"HOME OFFICE, 13th June, 1899.

"DEAR DR. ALLAN,—Your suggestion is important and timely. There is room for much more study and teaching of industrial diseases than is possible under present conditions. I am not sure how far it would be practicable to obtain admission for the purpose to works where some of the more

dangerous processes are carried on: but, at all events, a wide field is open.—Believe me, sincerely yours,

(Signed) “ARTHUR WHITELEGGE.”

My next step was to ascertain if courses of instruction in trade diseases were conducted in the United States of America, in France, or in Germany.

What is the outcome of the inquiry? Simply this, our Continental neighbours are ahead of us in the practical study of industrial hygiene.

Why should we lag behind? Surely the subject is as important to us as to the French and Germans.

But it may be urged against the special study of industrial diseases (1) that they are, after all, very limited, and (2) that the medical profession is quite alive to their existence and knows how to recognise them.

The answer is, (1) that so far from being limited they are much more extensive than is generally supposed, and (2) that unless the attention of the medical practitioner is specially directed to the occupation of his patient, the true cause of many a mysterious illness may be overlooked altogether.

I shall content myself with only two or three illustrations, in order not to encroach too much on your time and patience.

Take the well-worn theme of lead poisoning. Everyone knows that plumbers, painters, and potters are liable to the disease; but we are apt to forget that filecutters, glasscutters, dyers, artificial flower makers, and makers of wall paper are also subject to the malady.

When leaden lingoos are employed in the Jacquard loom, weavers have been known to suffer from plumbism. Even the *dressmaker* has been known to suffer from lead poisoning as a consequence of her occupation.

A large treatise might be devoted (and not unprofitably) to the discussion of the various sources of lead poisoning.

Again, we are not led to associate *mercurial poisoning* with *hatmaking*, and yet mercurial poisoning is a real danger in that trade, as it is in the bronzing of plaster casts, in gilding, in artificial flower making, &c.

Again, disease due to the *bacillus anthracis* is met with in different trades. We meet with it in men who handle foreign hides, in fellmongers, haircleaners, woolsorters, and butchers. And an interesting and important point in regard to the *bacillus anthracis* is the fact that it may give rise to very

different manifestations—appearing in the butcher as a *local* affection (malignant pustule, or “charbon”), and in the wool-sorter or haircleaner as a *constitutional* affection, under the name of “woolsorters’ disease” or “splenic fever.”

It is unnecessary to multiply examples of the wide-spread character of trade diseases. But, as regards the second point (the ready recognition of these diseases), it may be said once for all that they may be readily overlooked, or, rather, that their true cause may be easily overlooked.

To revert to plumbism. No doubt, if a man comes to you complaining of drop-wrist or severe colic, and tells you that he is a painter or a mixer of the “glaze” in a pottery, at the same time showing you a blue line on his gums, it is easy to diagnose the case as one of plumbism.

But it is to be borne in mind that there are other forms of plumbism besides colic and drop-wrist, and that there may be no blue line on the gums.

The forms and phases of chronic lead poisoning are numerous, and may be difficult of recognition and definition. It may be a form of “marasmus,” or chronic pernicious “bad health,” and it may embitter the sufferer’s life and cause his death, and yet exhibit none of the “typical” or “characteristic” features which we expect to find in a “well-marked” case of lead poisoning. One must be *on the alert* to detect such cases, and, if possible, rescue them.

“Dr. Rayner reports that the proportion of painters, plumbers, and glaziers among his insane patients was nearly one-third more than among the general population” (*Hygiene and Public Health*, Stevenson and Murphy, vol. i, p. 961).

Again, to revert for a moment to anthrax. As already remarked, it displays itself in different forms. Let us take one—that of woolsorters’ disease. When it takes thorough root in the patient the course of the disease is short, as a rule—a day or two, perhaps less—and a fatal ending.

But there are milder forms of ailment occurring among woolworkers, which pass off. Those subjects have got too small a dose, or they do not furnish a suitable soil for the growth of the *bacillus anthracis*. Yet those milder attacks are due to the same cause as the fatal cases. Their true nature might easily be overlooked.

The history of woolsorters’ disease is interesting. It was recognised that woolsorters suffered from a peculiar malady, and some died; but it required the labours of Bell, of Bradford, to reveal the nature and true cause of the disease. As Dr. Whitelegge says, in his letter, “a wide field is open.”



But, now, the question may be asked—Supposing the matter to be taken up, what form would this course assume? I would propose a three months' course: each week a lecture on one day and a visit to a public work on another; in all, twelve lectures and twelve demonstrations.

In the lectures a brief account would be given of our principal industries, especially those carried on in our city, and attention would be called to the dangers to health and life attendant upon each, together with hints on prophylaxis and treatment.

The visits to public works would constitute practical illustrations of what had been taught in the class-room, and, at the same time, afford pleasant mind-expanding excursion for the students.

Among the public works which might be selected for such visits may be mentioned:—Flour mills, bakeries, breweries and distilleries, sugar refineries, spinning and weaving factories, dyeworks, hair and feather works, tanneries, glass works, potteries, chemical works, iron and steel works, &c.

It may be argued that the medical student has already too many classes. But he has now a five years' course, and this scheme would entail only one additional lecture per week; the visit to a public work would be a holiday task.

A *small* fee might be charged: I would propose half a guinea for the course.

Perhaps only a very limited number of students would take such a class; but I am convinced that the instruction would be beneficial to all medical students. I have already said that "trade diseases" may be claimed as part of hygiene or public health. I acknowledge the justice of this claim; but it must be borne in mind that "public health" is a very wide subject, and "trade diseases" can receive only very limited time and attention.

A course such as I have indicated would be an attempt to deal more in detail with a very important section of the subject, and it might be committed to the special care of an assistant professor or lecturer on hygiene.

Surely we have many young and energetic men, both able and willing, to carry on such work. And can it be denied that the work is of great importance, not merely in a medical, but in a social and national, sense?

Sir John Simon (in the preface to his *English Sanitary Institutions*) says:—"The argumentary parts of my work, I need hardly observe, do not in any degree pretend to be



contributory to the science of medicine. Their ambition, if I may apply so large a word to the very modest hopes with which they have been written, relates principally to the practice of government in the great national interest concerned. With much diffidence I offer them, as contribution of the only sort I can make, towards counsels which are now being taken on all sides as to the ways of promoting the welfare of the people. My endeavour relates essentially to but one section, and for the most part only to one sub-section, of that great enterprise of our time. That even the sub-section is of immense public importance, that *to procure for the life and happiness of the nation the utmost possible freedom from interruptions by disease, is a task well worthy to engage the best energies of many best minds*, are considerations which members of my profession may well contemplate with peculiar gladness." The passage which I have put into italics contains a noble thought eloquently expressed. One word more and I have done.

Arlidge, in his work on *The Hygiene, Diseases, and Mortality of Occupations*, reproaches the medical schools of some of the English manufacturing towns for neglecting to provide suitable pathological specimens to illustrate the trade diseases prevalent among them.

This is some years ago, and doubtless the reproach no longer exists, but it raises the question—Is this matter receiving due attention in North Britain?

Gentlemen, I should feel very much gratified if the Glasgow Medical School took up the subject of "Lectureships on Trade Diseases," and carried it to a successful issue.

[*Note.*—Since the foregoing was written, the Home Secretary, Sir Matthew White Ridley, has introduced into Parliament the "Factory and Workshops Acts Amendment Bill," which aims at the regulation of dangerous trades and the abolition of arbitration. The bill was introduced on 2nd March. If it should become law, it will do much for the diminution of trade diseases, and the promotion of the best interests of our working classes.—J. W. A.]

## MEETING XI.—6TH APRIL, 1900.

*The President, MR. H. E. CLARK, in the Chair.*

I.—CASE WHICH WAS OPERATED UPON FOR CICATRICIAL COMPRESSION OF THE BRACHIAL PLEXUS, CAUSING TOTAL PARALYSIS OF THE ARM, AND IN WHICH FUNCTION HAS NOW BEEN ALMOST COMPLETELY REGAINED.

BY DR. ROBERT KENNEDY.

The patient, a man, aged 47, on 26th November, 1898, while intoxicated, fell down a stair and sustained a dislocation of the left shoulder-joint, and fracture of the surgical neck of the left humerus.

He was admitted to Dr. Patterson's wards in the Western Infirmary, where the dislocation was reduced, and the fracture set and kept fixed for six weeks. At the end of that time it was noticed that there was very marked atrophy of the deltoid, biceps, triceps, and muscles of the fore-arm. The atrophy did not improve, but became even more marked, and on 2nd February, 1899, about ten weeks after the accident, the following was his condition:—There was great muscular atrophy from the deltoid downwards, but, from the elbow down to the hand, the atrophy was masked by œdema. There was a bulky mass of callus to be felt at the surgical neck of the humerus. The brachial and radial pulses were imperceptible, yet the circulation under the nails was good.

Voluntary movements were lost over the entire arm, which hung perfectly useless by his side, the only movement which he could communicate to it being an antero-posterior swinging motion, from the action of the pectoralis and latissimus dorsi. Abduction, however, was impossible.

Electrical examination of the muscles showed that the faradic irritability was lost in all the muscles, and the galvanic reactions showed the anodic closing contraction to be greater than the kathodic closing contraction, and sluggish.

Sensation in the hand and lower half of the fore-arm was absolutely lost for touch, pain, and thermic difference. In the upper half of the fore-arm, sense of touch was obtusely present, but the sense of pain was absent. From the elbow upwards, sensation gradually improved.

It was clear that the nerves had become involved in the callus of the fracture, and, as the atrophy was progressing so rapidly, further delay was useless. I therefore laid open the axilla by an incision 5 or 6 inches long. A greatly distended vein—the basilic—was met and held aside, and it was then found that the vessels and the cords of the brachial plexus and nerve trunks arising from them were all bound down to the callus by dense cicatricial tissue. The brachial artery distal to this mass was scarcely pulsating, so greatly was it compressed. From this mass the various structures were cut out and liberated. The internal cutaneous nerve was the first to be separated, next the veins, which were very much distended, and had therefore to be very carefully dealt with on account of the thinness of their walls. They were held to the one side. The median nerve was then isolated and separated upwards, till it passed into its two heads of origin. The separation was then continued along the outer head till the outer cord of the plexus was reached, which was then also dissected out. The musculo-cutaneous nerve was then dealt with in its turn, and was so extensively adherent that it had to be cleaned right into the coraco-brachialis. The inner head of the median was then traced up and freed, till it passed into the inner cord of the plexus, which was next dissected up till free. From this cord the ulnar nerve was traced and separated out till it also was quite free and movable. The involvement of these nerves was through a distance of more than three inches. The axillary artery was then separated from its adhesions, and it was now observed to be pulsating strongly. It was held out of the way, and the posterior cord of the plexus, with the musculo-spiral, subscapular, and circumflex nerves all freed from their adhesions, and, indeed, the subscapulars had to be separated out right up to their muscles. The nerve to the deltoid was adherent almost to the point of its disappearance through the quadrilateral space.

The hæmorrhage throughout this operation was slight, and only one ligature was applied. The operation lasted one hour and ten minutes, but time was lost, as the patient on three occasions stopped breathing, and artificial respiration had to be resorted to before respirations recommenced. As regards the operation wound, all that requires to be said is that it healed by first intention.

Next day some sensation had returned to the hand and fore-arm, the sense of touch being present, but no sense of pain. By the third day it was much improved, and localisation was correct.

The first sign of voluntary power in the arm was manifested on the thirteenth week after the operation. By the sixteenth week voluntary power had returned to the deltoid, and to the flexor and extensor muscles of the arm, and to the flexors and extensors of the fore-arm, which could just move the fingers.

Improvement has slowly but steadily advanced, and, now, at fourteen months after the operation, sensation is quite recovered for the senses of touch, pain, and difference of temperature. The atrophy has in great part disappeared except in the hand, and voluntary power is good in all the muscles except in the small muscles of the hand. He can thus raise the arm to the full extent, and has perfectly free movements at the shoulder-joint; he can flex and extend at the elbow; supinate and pronate, flex and extend at the wrist, and flex and extend the fingers. He can lift a chair with his hand and hold it up above his head at arm's length. His grasp is fairly good, and all that now remains to recover is the power of the small muscles of the hand, and, as the faradic irritability of these is now returning, it is probable that these also will, in a few months more, quite have regained their power.

II.—SECOND CASE OF BRACHIAL PLEXUS PARALYSIS, IN WHICH THE COMPRESSION WAS DUE TO A LARGE AXILLARY ANEURYSM, AND IN WHICH ANTILLUS' OPERATION WAS FOLLOWED BY COMPLETE RESTORATION OF SENSATION AND PARTIAL RESTORATION OF MOTION.

BY DR. ROBERT KENNEDY.

The two photographs shown were those of a boy, aged 14, whom I saw first on 12th August, 1898. He complained of great pain in the armpit and in the arm, of loss of power in the entire arm, and of loss of sensation in the hand and fore-arm. These symptoms had commenced six weeks previously, and he attributed them to the fact that at that time he had fallen asleep with his arm hanging over the back of a chair. He slept in that position for an hour, and, on awakening, found the arm swollen, sensation dulled, voluntary movements lost, and great pain in the arm and in the armpit. No improvement followed, but the condition became steadily worse. When I saw him he had absolutely no voluntary power in the muscles of the arm; there was marked atrophy of the deltoid and of the muscles of the arm. The only movement which he could execute with the arm was an antero-posterior swinging motion from the action of the

pectoralis and latissimus dorsi, exactly as in the first case. Otherwise, the arm was completely paralysed.

Sensation was in great part lost. Obscure sense of touch resulted when certain parts of the hand and fore-arm were pricked with a needle, but no sense of pain was thereby produced. Obscure sense of pain on pricking with a needle was present above the elbow, but it was by no means sharp.

In the axilla there was a swelling about the size of a large cocoanut. It bulged the floor of the axilla downwards, pushed the pectoralis forward nearly to the nipple line, and ascended to within an inch of the clavicle. It was semi-fluctuant, and gave an expansile pulsation, and a loud bruit could be heard on auscultation, the pulsation and bruit ceasing when the subclavian artery was compressed. The brachial pulse was very indistinct, and the radial scarcely perceptible. The boy kept the shoulder raised by the trapezius, and supported the arm with his left hand in order to take the pressure off the aneurysm and thus relieve his pain.

His general condition was bad. He was ill-nourished, and usually covered with sweat. His pulse was rapid, and the pain was intense and almost constant. He had not had more than snatches of sleep for weeks.

The diagnosis of aneurysm being perfectly clear, I decided to operate by Antyllus' method. Apart from the question of curing the aneurysm by merely tying the subclavian, I chose this operation, as it was desirable on account of the paralysis to relieve the pressure as quickly as possible, and not to leave a tumour containing blood-clot, which would only very slowly have been absorbed.

The sac was therefore exposed by an incision which commenced near the middle of the clavicle, and was carried down over the swelling to the inner side of the arm. Part of the great pectoral muscle was then lifted up and divided, and the sac of the aneurysm was then seen to encroach on the third part of the axillary artery. The pectoralis minor was then divided, and the second part of the axillary artery exposed, double ligatured, and cut. The sac of the aneurysm was then isolated, and was found to be spindle shaped, and over it were seen, tensely stretched and flattened out, all the large nerve cords of the brachial plexus and the nerves springing from them. The sac was then torn open, and the blood sponged away. It was then found that arterial hæmorrhage was copious from the torn distal end of the artery. This was immediately controlled by compression of the subclavian, and its source was clearly from collateral circulation carrying



blood to the brachial artery, which blood then issued from the cut distal end. The distal end of the artery was ligatured, and all hæmorrhage then ceased. The cavity of the sac was large enough to have contained a large orange. The divided muscles were then sutured and the wound closed.

As regards the operation, there is nothing to state further than that the boy made a rapid recovery, and was able to leave the nursing home in a fortnight, with his aneurysm cured, and his general health greatly improved.

As regards sensation, this was markedly improved on the day following operation, and gradually underwent further improvement until it was as perfect as in the sound arm.

His condition eleven weeks after the operation was as follows:—Sensation was perfectly recovered both for touch and pain. His localisation of touch was quick and correct. Voluntary movements were now commencing to return. The deltoid had increased considerably in bulk, and, when the boy abducted his arm, which he could do to the extent of 45 degrees, the muscle could be felt to contract. The biceps and triceps had also recovered power, and were able to flex and extend the fore-arm.

Although the local improvement was progressing quite satisfactorily, the boy's general condition was very unsatisfactory. He was suffering from tuberculosis of the lung, which was making rapid progress, and was doubtless greatly hastened by the low state to which his health had been reduced by the want of sleep caused by the pain from which he had suffered for six weeks. From this affection he died on 17th November, 1898, *i.e.*, three months after the operation, and thus did not live long enough for perfect recovery of the muscles of the arm to take place.

III.—CASE IN WHICH THE ULNAR NERVE WAS SUTURED THREE MONTHS AFTER DIVISION, WHICH RECOVERED SENSATION ON THE DAY FOLLOWING OPERATION, AND IN WHICH THE USE OF THE HAND HAS NOW BEEN COMPLETELY REGAINED.

By DR. ROBERT KENNEDY.

The patient, a boy, aged 15, was operated upon on 19th May, 1899.

Three months previously the patient fell while playing football, and sustained a cut with a piece of glass above the wrist on the right fore-arm. The doctor who saw him stitched several tendons, and found the ulnar nerve divided, and reported that he had stitched it also.

I saw him a short time before his admission to the Infirmary, and it was evident that the union of the nerve had failed. Thus, the right hand presented the characteristic attitude of ulnar paralysis, marked atrophy of the hypothenar eminence, and the palm hollowed out. Voluntarily, the fingers could not be flexed and extended more than to a slight degree, and the movements of abduction and adduction of the fingers were impossible. The nails presented the atrophic signs of ridging at their bases, and the skin of the palm was smooth and glossy, and the flexures greatly diminished. Sensation of pain, as tested by pricking with a needle, was entirely lost over the inner part of the palm and over the palmar aspects of the little and inner half of the ring fingers, but this test produced an obscure sense of touch. Temperature sense was lost. The electrical examination showed the reaction of degeneration in the affected muscles. He was therefore admitted to Dr. Patterson's wards, where I operated.

At the operation, all the structures in the neighbourhood of the scar were found matted together in dense adhesions, and on dissecting them out it was found that the central end of the ulnar nerve was attached to the distal end of one of the divided tendons of the flexor sublimis digitorum. The distal end of the nerve was discovered some distance off, lying in loose connective tissue, and not connected to any structure. The nerve was sutured, and the divided tendons repaired.

On the following day the note with regard to the condition of sensation is as follows:—On slightly pricking with a needle over the formerly insensitive parts the boy shouted out, evidently feeling pain with great acuteness, although his head was covered, and he was therefore unaware by sight of what was being done. This return of sensation was equally good over the inner part of the palm, and for the three inter-nodes of the little finger and inner half of the ring finger. The sense of touch over these regions was also nearly as distinct as normally.

At the end of fifteen weeks, atrophy was greatly diminished, there was no glossy appearance, and the flexures were well marked. The hypothenar eminence had greatly increased in bulk. Voluntary movements were now returning. He could bring both fingers into the palm, and his grasp was good. He could abduct and adduct all the fingers. Faradic irritability in the affected muscles was well marked.

It is now ten and a half months since the operation, and the boy has for some time had the full use of his hand, and, a month ago, passed his examination by one of the surgeons

of the 1st Lanarkshire Artillery Volunteers for field battery service.

IV.—TWO CASES OF SUTURE OF THE MEDIAN NERVE, ONE MONTH AND THREE MONTHS RESPECTIVELY AFTER DIVISION, IN WHICH THE USE OF THE HAND HAS NOW BEEN RECOVERED.

By DR. ROBERT KENNEDY.

The first case, that of a shipwright, aged 37, was operated upon on 11th August, 1898, one month after the division of his right median nerve above the wrist. When seen two days before the operation, he had pain shooting down the thumb, forefinger, and middle finger, and inability to flex the forefinger and middle finger more than to a slight degree. The thenar eminence was much atrophied, and opposition of the thumb was defective. There was no loss of sensation. At the operation, the flexor carpi radialis and palmaris longus were found divided. The median nerve had a bulky and dense cicatrix on it, but it had been divided only two-thirds of its thickness. The portion of nerve with the cicatrix was excised, and the two ends brought together by suture and the divided tendons repaired.

Eight weeks after the operation, opposition of the thumb was possible to the tips of all the fingers, but there was much stiffness of the hand. The wasting of the thenar eminence had disappeared, and faradic irritability was normal. After this the stiffness of the hand disappeared gradually, and he returned to his old work, at which he has remained till now, nearly twenty months since the operation, earning his full wage.

The second case is that of a joiner, aged 37, whose median nerve was divided in the right fore-arm, just above the wrist, in November, 1894. Three months later he had atrophic manifestations in the index-finger and thumb, and outer half of the palm, with marked atrophy of the thenar eminence. Opposition of the thumb was impossible, and the hand was useless. He had total loss of sensation on the anterior aspects of the thumb, index and middle fingers, and outer half of the palm. The median nerve was sutured, and, two days subsequently, he had sense of pain when pricked with a needle over the area formerly insensitive. At the end of the second month the atrophy of the thenar eminence had in great part disappeared, and opposition of the thumb was largely recovered.

A few months after the operation he returned to his work,

having regained the use of his hand. It is now five years since the operation, and he still retains the use of his hand, and is able to earn his full wage. A full account of his case was published three years ago in the *Philosophical Transactions*, but I bring him forward now to show the remote result.

V.—ON THE CLINICAL EXAMINATION OF THE BLOOD, SPECIALLY  
BY MEANS OF DRIED AND STAINED FILMS.<sup>1</sup>

By DR. J. M'GREGOR-ROBERTSON AND DR. J. SOUTTAR M'KENDRICK.

My purpose is not to offer you anything in the nature of an original contribution to the study of the histological characters of blood or their methods of demonstration.

Anyone who has been engaged, as I have been now for almost twenty years, in the practice of medicine, must be profoundly conscious of the tremendous changes which have occurred during even that time in the methods of clinical diagnosis, and of the advantage which the medical student of to-day has, or ought to have, in being able to study the phenomena of disease by more accurate and scientific methods than were available to an older generation of students.

I was born into medicine, like others here, when diagnosis by pulse and tongue was, one might say, only in process of being reinforced by thermometer and stethoscope; and when an old tablespoon, the dregs of a vinegar bottle, and a handy gas bracket were deemed a fairly adequate chemical equipment.

You will agree with me that a new clinical method, which is applicable only in a scientific laboratory or a well-equipped hospital, is but of limited and precarious usefulness, and that the final test of the value of a new clinical method is its ultimate adaptability to the needs and limitations of the general practitioner.

While admitting the value of the assistance to the busy practitioner afforded by research laboratories or associations or firms who, for moderate sums, undertake the chemical and microscopical examination of clinical material, I hope they are agencies not likely to be permanent, at least for such purposes, but existing only for a time to overtake part of the work of diagnosis, which, ultimately, by the better equipment of our hospitals and schools, and the more complete practical training of our students, every practitioner of medicine will be able to do for himself.

<sup>1</sup> The paper was read by me, hence the use of the first person singular; but it embodies the work of both.—J. M'G.-R.



I fancy many of you have, like me, been groping your way through the more elaborate details of modern urine analysis, modern gastric methods, and microscopical and bacteriological aids to diagnosis, and will be in sympathy with me when I mourn over the failure of the investigators and devisers of new methods to remember the burdens and long hours of the oppressed general practitioner, and to adjust their devices, if possible, to his much harassed pocket and his fast vanishing leisure.

I have thought, therefore, it might meet with your acceptance if I laid before you, as briefly as I can, my experience of one of these new methods—that of the clinical examination of the blood, particularly by means of fixed and stained films—and what Dr. M'Kendrick and I, working together, have so far found to be the simplest and shortest method, which, whatever defects it may have from a purely pathological point of view, seems to fulfil the necessary requirements of any aid to diagnosis which is to be constantly available.

The fact that, from the examination of a stained blood film alone, an absolute diagnosis can be made in one or two cases of disease, while in other cases a differential diagnosis is impossible without it, is conclusive proof of the value of this method.

But, when it was introduced by Ehrlich in 1878-79, the process was long and somewhat elaborate. It was, briefly, as follows:—He spread a thin film of the blood to be examined on a cover-glass. The preparation was allowed to dry in air, and was then placed on a copper plate, heated to a temperature of between  $110^{\circ}$  and  $120^{\circ}$  C., and was kept at this for two hours or more. This fixed the protoplasm of the blood-cells. The cover-glass was then floated on one staining solution for a short time, washed, transferred to a second colouring solution, thereby doubly or trebly staining the preparation, which was then washed, dried, or dehydrated in absolute alcohol, cleared in xylol, and mounted in balsam. The usefulness of this method is obviously limited, because of the time required as well as because of the nature of some of the detail.

The later work of Ehrlich and of other observers, among them Muir, Gulland, Nikiforoff, Kanthack, has shown that the whole process may be quite satisfactorily performed in a much shorter time, indeed, in even something like four or five minutes, and in an easier way.

For all practical clinical purposes the preparation may be fixed in a few minutes by drying in air, with the aid of a slight degree of heat from a spirit lamp or a Bunsen burner,



and by subsequent immersion for two or three minutes in a mixture of equal parts of absolute alcohol and pure ether (Nikiforoff).

If, however, one desires to study finer details of protoplasmic structure, the film is fixed by immersion in an alcoholic solution of corrosive sublimate, to which a proportion of common salt is added,<sup>1</sup> or in an alcoholic solution of formol,<sup>2</sup> or a saturated watery solution of picric acid.<sup>3</sup>

By whatever method the preparation is fixed, the staining may be accomplished in from half a minute to two or three minutes.

Owing to the fact that the red and white cells are differently affected by different stains, and that the nuclei of the white cells and the granules of the protoplasm of the cell body react also differently, it is possible to stain by two or more different colours, and so to produce a counter-stain. The preparation may, therefore, after immersion in one staining solution, be washed and transferred to another, or may be counter-stained by one immersion in a solution containing two or more staining agents.

The staining agents in chief use are eosin,<sup>4</sup> with hæmatoxylin as a counter-stain;<sup>5</sup> eosin, with methylene-blue;<sup>6</sup> or the

<sup>1</sup> *Muir's method*.—(1) Immerse the preparation, without previous drying, in a saturated watery solution of  $\text{HgCl}_2$  with three-fourths per cent  $\text{NaCl}$  for thirty minutes; (2) wash in three-fourths per cent  $\text{NaCl}$ ; (3) take through successive strengths of alcohol, up to absolute; (4) stain, &c.

<sup>2</sup> *Benario's method*.—Formalin, 1 part; water, 9 parts; absolute alcohol, 90 parts. In this solution immersion for one minute is sufficient. Then wash and stain, preferably in eosin-hæmatoxylin.

<sup>3</sup> *Müller's method*.—(1) After heating the preparation up to  $110^\circ \text{C}$ . for ten to fifteen minutes, and then letting it become cold, immerse it for twenty-four hours in a saturated watery solution of picric acid; (2) wash for twenty-four hours in water; (3) stain in hæmatoxylin or borax-carmin.

<sup>4</sup> *Eosin solution*.—Eosin, 1 gramme; water, 100 c.cm.; absolute alcohol, 100 c.cm.

<sup>5</sup> *Böhmer's or Delafield's hæmatoxylin solution*.—Delafield's is prepared as follows:—2 grammes crystallised hæmatoxylin solution, dissolved in 12.5 c.cm. absolute alcohol, to which add 200 c.cm. concentrated watery solution of alum. Allow the whole to stand for four days, filter, and add 100 c.cm. glycerine and 100 c.cm. methyl alcohol. Allow to stand for other two days, filter. For use, dilute with an equal volume of water, and *always filter immediately before use*.

<sup>6</sup> *Loeffler's alkaline methylene-blue solution*.—30 c.cm. concentrated alcoholic solution of methylene-blue, 100 c.cm. one-tenth per cent potash solution.

The eosin-hæmatoxylin solutions stain the red cells and oxyphile granules red, and the nuclei in the hæmatoxylin colour. The eosin-methylene-blue solutions stain red cells and oxyphile granules red, nuclei and mast-cell granules blue, neutrophile granules very faint salmon hue.

single solution of Ehrlich's triple stain<sup>1</sup> of acid fuchsin, methyl-green, and orange G.

The differential character of the stain is due to the fact that certain granules of the blood-cells react to the acid of the staining agent, other granules to the base, while, in a third set of cells, the protoplasm of the cell-body is hyaline, without specific granulation, and so is little or not at all affected by the stain, though the nucleus is. Thus, it has been found that among the white cells of the blood there are varieties, which are distinguished from one another by their reaction to different staining agents.

This is the basis of the modern classification of the white cells of the blood.

The white cells, the granules of whose protoplasm react to acid stains, are called *oxyphile*,<sup>2</sup> and, since eosin is the chief of these acid stains, the most obvious of these cells have been

<sup>1</sup> *Ehrlich's triple stain*.—Saturated watery solution orange G., 135 c.cm.; saturated watery solution acid fuchsin, 65 c.cm.; distilled water, 150 c.cm.; absolute alcohol, 150 c.cm.; saturated watery solution methyl-green, 125 c.cm. Mix these ingredients thoroughly, then add with constant shaking glycerine, 100 c.cm., and absolute alcohol, 100 c.cm. This is, however, best made from the Ehrlich-Biondi or Biondi-Heidenhain powder, obtained from G. Grüber of Leipsic.

Ehrlich's stain colours red cells orange, oxyphile granules copper-red, neutrophile violet. Mast-cells are unstained, except the nuclei, which are pale green. They appear, therefore, as polynuclear cells free of granules.

<sup>2</sup> Of a large number of stains used, Ehrlich has made a classification according to their reaction to white cells into acid, basic, and neutral. This is not meant to be, it must be observed, a proper *chemical* classification. It is histological rather.

To the so-called *acid series* belong—Eosin, aurantia, indulin, nigrosin, bengalin, orange G., acid-fuchsin, tropaeolin, Bordeaux, ponceau, fluorescein, chrysolin, narcein, picrate of ammonium, naphthylamin-yellow, coccin, pyrosin J. and R.

To the *basic group* belong—Fuchsin, roseo-naphthylamin, cyanin, safranin, Bismarck-brown, gentiana, dahlia, methyl-green, methyl-violet, methylene-blue, rhodamin, pyronin, amethyst-violet.

A *neutral stain* is obtained by a combination of basic with acid stain. Such a combination is not easily soluble, unless in excess of the acid stain. Ehrlich gives as illustrations of combinations of such so-called neutral mixtures the following:—

1. Combination of one acid with two basic stains—

(a) Orange G. with amethyst-violet and methyl-green.

(b) Narcein     "     pyronin     "     methyl-green.

(c) Narcein     "     pyronin     "     methylene-blue.

2. Combination of two acid with one basic stain—

(a) Orange G. with acid-fuchsin and methyl-green.

(b) Narcein     "     acid-fuchsin     "     methyl-green.

(c) Narcein     "     acid-fuchsin     "     methyl-blue.

(d) Narcein     "     acid-fuchsin     "     amethyst-violet.

called *eosinophiles*. White cells whose granules react to basic stains are called *basophile*. On the other hand, the protoplasm of a third variety is *hyaline*, and is little if at all stained by either, while the nuclei of these, as of the others, react to nuclear stains.

Thus, differentiated by staining agents, there are three varieties of white cells—

1. Oxyphile.
2. Basophile.
3. Hyaline.

In the case of the first two, the granules may be coarse or fine; in the case of the last, there is a cell distinctly large and one distinctly small, though there are others intermediate in size. Thus, you have a further sub-division into—

1. Coarsely granular oxyphile (*eosinophile*).
2. Finely granular oxyphile (*myelocyte* and *polymorpho-nuclear neutrophile*).
3. Coarsely granular basophile (*Mastzellen*).<sup>1</sup>
4. Finely granular basophile.
5. Large hyaline.
6. Small hyaline (*lymphocyte*).

But even this is not a complete classification, for there are at least two kinds of white cells containing finely granular protoplasm, reacting faintly to acid and to neutral stains—one with a large, often reniform, nucleus, the *myelocyte of leukemic blood*, and another with a multipartite nucleus, or, at least, polymorphic nucleus, the so-called *multinuclear or polymorpho-nuclear neutrophile of normal blood*. To these two the large hyaline cell bears a strong resemblance, differing from the true marrow-cell or myelocyte in the absence of neutrophile granules, and differing from the polymorpho-nuclear neutrophile in the simple character of its nucleus.

Now, in *normal blood* the greater proportion of the white cells consist of the finely granular oxyphile, more commonly called neutrophile, so called by Ehrlich, who believed the granules reacted to the combination of both acid and basic stain, though Kanthack and Hardy have shown them to be really oxyphilic.

The next most common variety of white cell in normal

<sup>1</sup> The granules of these cells are brought out only by the methylene-blue of the staining solutions whose formulæ have been given. They may be shown (in pathological blood) by the following:—Saturated (distilled) watery solution of dahlia, 100 c.c.; absolute alcohol, 50 c.c.; glacial acetic acid, 12·5 c.c. The preparation should be immersed in this for twenty-four hours, then washed, cleared, and mounted.

blood is the small uni-nuclear lymphocyte, while the large hyaline cell is third in order of percentage, and the eosinophile is least common and very difficult to find. The basophile is not found.<sup>1</sup> All these varieties, taken together, constitute, in normal blood, a very small proportion of the cellular elements, amounting as they do to not more than, on an average, 1 for every 700 red cells.<sup>2</sup> In leukæmia, on the other hand, the proportion of white to red may become as great as 1 to 10, or even greater than that.

Yet even more significant changes are revealed when the proportion of the several varieties of white cells in normal blood is compared with the proportion in certain diseased conditions.

The percentages of these four varieties of white cell of normal blood, and the average size of each variety, is given as follows :—

SIZE.	VARIETY.	PERCENTAGE OF TOTAL WHITE.
9-14 $\mu$ .	Polymorpho-nuclear neutrophile,	70-72
7-9 $\mu$ .	Small uni-nuclear lymphocyte,	22-25
12 $\mu$ .	Large hyaline,	2-4
12 $\mu$ .	Eosinophile,	2-4

Now, in leukæmic blood you have these proportions altered, and, in addition, you have a new element—the large (about 15  $\mu$ ) mono-nuclear, finely granular myelocyte; and the average proportion of these varieties of white cells of leukæmic blood in the specimens Dr. M'Kendrick will demonstrate to you are—

Marrow cells, or myelocytes,	between 35 and 50 per cent.
Polymorpho-nuclear neutrophiles,	17 " 38 "
Eosinophiles,	10 " 20 "
Large hyaline,	7 " 10 "
Small uni-nuclear lymphocyte,	1 " 5 "

In short, in this disease (myelogenic leukæmia) an abnormal variety of white cell is added to the blood, which out-numbers all the normal varieties, and a variety existing in normal blood to only between 2 and 4 per cent is increased about five fold—the eosinophile; while the small hyaline cell is reduced from between 15 and 20 to between 1 and 5 per cent. Further, the basophile mast-cell is found to a marked extent, an increase

<sup>1</sup> Ehrlich says it is found to the extent of 0.5 per cent as a maximum.

<sup>2</sup> Red cells of normal blood (per cubic millimetre), 4,500,000 in female to 5,000,000 in male; white cells in normal blood (per cubic millimetre), 6,000 to 10,000.

unknown in any other condition, while nucleated red cells are also common.

I have taken leukæmic blood as illustrative of the very remarkable diagnostic facts this method of blood examination reveals, because the facts are in it so obvious and striking, and because Dr. M'Kendrick is able to show each one of those facts by means of specimens from a case at present under treatment. These specimens illustrate how comparatively easily not only a determination of the proportion of total white to red may be made, but also how a differential count of the varieties of white may be done. It will also be clear what assistance such films, taken from time to time in the course of treatment, could render in determining the effects of treatment.

Changes in the red cells are revealed equally clearly by this method. Such changes are of several kinds:—

1. Alterations in size—increase, *macrocytes*; decrease, *microcytes*.

2. Changes in shape—oval, irregular, pear-shaped, prickleshaped—*poikilocytosis*.

3. Changes of degeneration shown by a tendency of the cell protoplasm to stain irregularly, or to pick up from a staining mixture one pigment by one part of the protoplasm, another pigment by another—*polychromatophilia*.

4. The occurrence of nucleated red cells—(a) of the size of normal blood cells ( $10\ \mu$ )—*normoblasts*; (b) large sized cells ( $11$  to  $20\ \mu$ )—*megaloblasts*; (c) rare, very small nucleated cells—*microblasts*.

It is suggested that the occurrence of normoblasts indicates a regenerative process, while the presence of megaloblasts is the sign of a grave disorder, and, if they are in large numbers, is of almost fatal significance.

Specimens of each of these varieties of red cell are shown under the microscope. The nucleus is stained by the hæmatoxylin or methylene-blue or green; the rest of the cell by the eosin, or orange G.

*The method* followed in making these preparations was as follows:—

1. The slides are first prepared by washing in soap and water, then in plain water, drying, and steeping in ether, in which they lie till needed.

2. The finger or lobe of the ear of the patient is washed with soap and water, then dried, then washed with alcohol and ether, and dried. The lobe of the ear is to be preferred.



The friction of washing brings the blood to it. If the lobe be taken between finger and thumb, and the puncture be rapidly made, it is painless. The blood flows readily—pressure must not be used—and can be readily stopped.

3. The puncture being made with the lance point obtainable for the purpose, the first four or five drops are removed with a piece of clean gauze. Then a clean slide, held by the edge between the finger and thumb, is made to touch the hanging drop (but not to touch the skin) about the middle of the slide. This slide is held between finger and thumb of left hand, a second clean slide is taken by the right hand and its *edge* held at an angle of  $45^\circ$  to the *surface* of the one with the drop on it. The edge is then swept steadily along the surface to the end of the slide, spreading out a thin film of blood as it goes.

4. This slide, with the film thus spread, is held in the fingers over a spirit flame till the film is dry. This film may now be kept indefinitely if kept quite dry. The film may thus be prepared by the bedside, placed in an appropriate box, and brought home for examination. For the further process, glass stoppered cylindrical bottles, of 2 oz. capacity, capable of holding two or three slides vertically, are used. Such can be obtained from the York Glass Co. or through Baird & Tatlock. One contains the mixture of alcohol and ether, a second the eosin solution, a third the hæmatoxylin or methylene-blue, a fourth Ehrlich's mixture.

5. The dried film is placed in the alcohol and ether mixture. It should remain two or three minutes, but it may remain any length of time without injury.

6. Removed from the fixing solution, the slide is dried, then immersed in the eosin solution for fifteen to thirty seconds. It is then washed.

7. The eosin stained preparation is now immersed in the hæmatoxylin or methylene-blue for from a few seconds to one or two minutes.

8. It is then washed, dried with heat, cleared up in xylol, and mounted in balsam.

The specimens require to be examined under a one-twelfth oil immersion.

At the time the film is made the number of red cells and quantity of hæmoglobin in the blood should be determined.

Each observation of the same patient should be made, as nearly as possible, at the same time of day, especially at the same interval from a meal. The best time is before breakfast.

It was not my object to discuss the value of this method of blood examination, or to go into any detail as to its usefulness in differential diagnosis. The above remarks were merely meant to be introductory to the demonstration set out by Dr. M'Kendrick.

Perhaps, however, this paper may be deemed deficient without, at least, a brief account of the results of the method. In preparing the following summary we have had regard only to the practically useful facts.

*Diagnostic aid from the red cells.*

1. In all secondary anæmias—that is, anæmias dependent upon some other condition, such as hæmorrhage, febrile diseases, chronic affections such as kidney or liver disease or dysentery, malignant disease, bad hygiene, chronic poisoning, &c.—the fact of anæmia is readily settled by the blood film, but a little practice speedily enables one to estimate in a manner, otherwise impossible, the degree and gravity of the blood change.

In slighter degrees of anæmia the only obvious differences are (*a*) the alterations of size of the red cells and (*b*) their lack of colour. The cells are smaller and paler. The loss of colour may not be apparent in every cell. Some seem but the pale ghosts of the normal; in many, the lessened hæmoglobin shows chiefly in the centre of the cell, because of its thinness there, and the cell has the appearance of a colourless central space, of circular outline, surrounded by a rim of colour. Eosin staining tends to accentuate this difference. The red cell having an affinity for that colour, the contrast between normal cells, those somewhat deficient in hæmoglobin, and cells much washed out, becomes very striking.

In profounder degrees of anæmia there are added—(*c*) alterations in shape (poikilocytosis), (*d*) polychromatophilic evidences of degenerative change within the cell.

In still more profound degree there is (*e*) the presence of normoblasts, and occasionally a megaloblast.

2. Pernicious anæmia, on the other hand, shows in most striking degree the variety of size and shape of red cells, but with this noteworthy difference, that while microcytes are present, *increase* in the size of the cells is more characteristic. Degenerative changes are evident, and normoblasts are present, *but megaloblasts are numerous*. This abundance of megaloblasts is a symptom of specially evil significance.

Another contrast between simple anæmias and pernicious anæmia lies in the fact that while the red cells of the pernicious

disease may be enormously reduced in number, the individual cells may contain more than the normal amount of hæmoglobin.<sup>1</sup> This not only distinguishes pernicious from ordinary anæmias, but also from *chlorosis*, in which the number of the red cells may be little below normal, while the amount of hæmoglobin in each cell is enormously reduced. A single glance, therefore, at a blood film might, by the pallor of the red cells, dispel the fear of pernicious anæmia, and swing the balance of evidence over to chlorosis.

A blood film, then, will often unmistakeably warn one of the gravity of an anæmic case, which otherwise might have been lightly considered. It will differentiate, by the number of megaloblasts, the high colour of the individual corpuscles, the numerous macrocytes, and the markedly misshapen cells, the blood of pernicious anæmia from the undersized, washed-out looking, but less misshapen cells of chlorotic blood, with its few, if any, megaloblasts, though normoblasts be abundant. It may also raise the suspicion of concealed malignant disease, if the blood presents the characters of secondary anæmia, low colour index, pale but not otherwise markedly abnormal cells, with perhaps a rare normoblast, in a person who, without marked symptoms or assignable cause, has been progressively losing strength and flesh for some time.

3. It is in the red cells that the malarial organism is found, and the staining methods described may be used.

4. Normoblasts and megaloblasts are frequent in leukæmia.

It will save further reference to the anæmic diseases if we remark here that, as regards the white cells, there is little of diagnostic value, but in pernicious anæmia the white cells are deficient (leucopenia), sometimes markedly so, and of the total white cells the lymphocyte has its

<sup>1</sup> The colour index is a short way of expressing the relation between the number of red cells and the amount of hæmoglobin. The

$$\frac{\text{percentage amount of hæmoglobin}}{\text{percentage number of red cells}} = \text{colour index and ought to} = 1.$$

If the red cells are 100 per cent, and the hæmoglobin is 100 per cent, then the colour index is  $\frac{100}{100} = 1$ .

Now in *pernicious anæmia* the percentage of red cells may be as low as 25, but the hæmoglobin may be 27 per cent. The colour index is, therefore,  $\frac{27}{25} = 1.08$ .

In *chlorosis*, on the other hand, the percentage of red cells may be 82, while the hæmoglobin is as low as 41, colour index =  $\frac{41}{82} = 0.5$ .

In the ordinary *secondary anæmias* the colour index is practically always less than 1, but it seldom goes so low as in chlorosis, in which this lowness is one of the most significant facts of the disease.

proportion increased. In chlorosis the condition as regards white cells is similar.

As regards secondary anæmia, there is one fact regarding the white cells of great value. The anæmia of malignant disease may be so profound as to produce a reduction in the number of red cells and appearances in the blood film akin to those of pernicious anæmia, *but in such cases there is usually a marked increase of white cells* (leucocytosis), at once differentiating it from an uncomplicated case of pernicious anæmia.

#### *Diagnostic aid from the white cells.*

The changes relating to the white cells which are of diagnostic value refer to (1) either the total number of white cells of all kinds, per cubic millimetre of blood, and their proportion to the red; or to (2) the percentage proportion of the different varieties of white cells, considered by themselves; or (3) the presence of abnormal varieties. Now, the total number of white cells may be considerably increased above the upper limit of the ordinary standard (this is called a *leucocytosis*); or the total number may be diminished below the lower limit of the ordinary standard (this is called a *leucopenia*). In the case of increase it may affect all varieties alike, so that the proportion of each is not disturbed; or it may be due to an excess of one or more varieties only.

These conditions are not all abnormal. There are, indeed, certain leucocytoses which are quite physiological, but in those it is always the polymorpho-nuclear variety that is increased. When any increase in the other varieties occurs, the condition is a pathological one.

#### *Physiological leucocytosis is found—*

1. In the blood of the newly born, in which a count of 30,000 white cells is not remarkable, even in children up to 2 years of age.

2. In the blood of women in the *later* months of pregnancy, in which 13,000 is an average count, rising to 16,000 or 18,000 at the beginning of labour.

3. In the blood, after parturition, for several weeks. Between 20,000 and 30,000 is not infrequent, even two weeks after parturition. This must not be forgotten in the differential diagnosis of septic conditions.

4. The blood of all persons in ordinary health shows a leucocytosis, beginning about an hour after each meal which contains proteids. This increase may raise the number of white cells to 13,000, and it lasts for several hours. Blood examinations are, therefore, best made before a meal, and



preferably before breakfast. The correlative of this is that the blood of a fasting person will show a leucopenia, and any disease which hinders absorption of food will produce a more or less permanent leucopenia. Even a functional gastric or gastro-intestinal disorder may do this.

Fleeting leucocytosis is also caused by exercise, massage, cold bathing of short duration, and prolonged hot baths.

*Pathological leucocytosis* occurs in a large number of diseases, but here, as already stated, the absolute increase in the total number of white cells is accompanied by an alteration in the percentages of the different varieties. In most cases it is the polymorpho-nuclear neutrophile variety that is chiefly in excess, in a few it is mainly the lymphocytes (*lymphocytosis*), sometimes it is the eosinophiles (*eosinophilia*), while in myelogenic leukæmia it is a white cell, foreign to normal blood—the myelocyte—that is most abundant. This might be termed *myelocytosis*.

The pathological leucocytoses are as follows:—

1. Post-hæmorrhagic leucocytosis. Within a short time after hæmorrhage the white cells may rise to 16,000 or 18,000, and the chief increase is in the polymorpho-nuclear neutrophile.

2. Leucocytosis of inflammatory diseases:—Pneumonia, endometritis, salpingitis, cholecystitis, and non-tubercular inflammations of serous membranes (pericarditis, pleurisy, peritonitis, arthritis—simple and rheumatic).

3. Leucocytosis of septic conditions:—Puerperal septicæmia, septic meningitis and cerebro-spinal meningitis, malignant endocarditis, osteomyelitis, appendicitis, abscess, furunculosis, and all suppurating and pyæmic conditions.

4. Leucocytosis of malignant disease.

5. Leucocytosis of infectious diseases:—Cholera, relapsing fever, typhus, scarlet fever, diphtheria, follicular tonsillitis, erysipelas, small-pox, gonorrhœa, secondary syphilis.

6. Leucocytosis of skin affections:—Dermatitis, pemphigus, herpes, prurigo, sometimes eczema.

7. Toxic leucocytosis:—Quinine poisoning, uric acid diathesis, uræmic poisoning, injections of tuberculin and thyroid extract and bacterio-proteins, intravenous saline injections, injection of salicylates, etherisation.

As remarkable exceptions to this list, the absence of leucocytosis should be noted among infectious diseases in typhoid fever, malaria, measles and rôtheln, and tuberculosis. In typhoid fever and measles without complication there is, indeed, a leucopenia in which the polymorpho-nuclear neutrophiles are chiefly involved.



*In uncomplicated tuberculosis, whether incipient or miliary, and in meningitis, peritonitis, ostitis and periostitis, pleurisy and pericarditis of tubercular origin, there is no increase in the number of white cells.*

A glance at these lists will suggest many valuable possibilities in differential diagnosis.

1. Rötheln is sometimes very difficult to distinguish from scarlet fever. But a count of the leucocytes, during an epidemic of rötheln, might save many patients the needless lengthy isolation that the risk of scarlet fever demands, while it might save a rötheln case being placed in a scarlet fever ward with all its risks, and with the unhappy results of which most of us must be aware.

2. A blood film would be a great aid, in the presence of a leucocytosis, in determining the non-tubercular character of a serous inflammation or of a meningitis.

3. It would settle the doubt between typhoid and malaria by the discovery in the red cells of the malarial organism, or between typhoid and pyæmia, or typhoid and appendicitis, or between an inflammatory disorder attended by pus formation and typhoid, by the absence of leucocytosis in the case of enteric fever, and its presence in all the others.

4. In typhoid fever the occurrence of leucocytosis would point to the presence of a complication, some secondary septic process or abscess formation, or would affirm the occurrence of perforation.

5. In an appendicitis in which the question of operation seemed difficult to settle, the arbitrament of a leucocyte count would be a justifiable procedure, an increasing leucocytosis indicating suppuration.

These are the most obvious conclusions that *a priori* might be drawn from the lists that have been given, and there is abundant experience to prove their reliability, and valuable suggestions of a similar kind arise from a more elaborate scrutiny of them. But enough has been said to indicate their usefulness.

6. The leucocytosis of malignant disease is, unfortunately, not a reliable quantity. In small tumours of slow growth it may be entirely absent. In certain situations the disease may even produce a leucopenia by interfering with the ingestion or absorption of food, as in cancer of the œsophagus. On the other hand, a rapidly growing malignant tumour, specially in a glandular organ, accompanied by metastases, may produce changes in the blood as profound as pernicious anæmia. While, therefore, the absolute diagnostic value of this sign is small,

there are very many cases in which the evidence of blood film might be of great value when considered in relation to other facts of the case (see p. 153). In a case of admitted cancer, say within the abdominal cavity or pelvis, where the question of propriety of operating was difficult to settle, the presence of marked leucocytosis would tell against operating.

7. The case of pneumonia deserves to be set in a position of special prominence. While a blood examination in pneumonia is not enough to settle by itself the diagnosis, as in leukæmia, there is probably no other disease in which it is more valuable. In pneumonia, from the very commencement, a leucocytosis is present, with certain as significant exceptions. It continues throughout the period of pyrexia, and it begins to decline at, or shortly before, the crisis. If resolution be delayed, and suppuration or gangrene occur, the decline does not set in. The degree of leucocytosis is an index of the degree of severity of the attack. But when the attack is so violent as simply to overwhelm the patient, or when the patient is so inherently deficient in resistance as to fail to make any stand against an attack, even though it be of no more than moderate severity, leucocytosis does not appear.

Thus (1), the decision in a suspected case of pneumonia may be made by means of a blood examination before the physical signs become conclusive, (2) the severity of an attack may be gauged and a prognosis made, (3) the advent of the crisis recognised, or (4) the occurrence and, to an extent, the nature of a complication recognised. It is the polymorpho-nuclear forms that are specially increased, eosinophiles and small lymphocytes actually diminishing.

The illustrations that have been given, it will be noticed, refer only to the fact of an increase above the normal in the total number of white cells.

In the earlier part of this paper the diagnostic value of a percentage determination of the varieties of leucocytes has been abundantly illustrated in the case of splenic leukæmia. In lymphatic leukæmia it may be the small or the large hyaline cell that predominates, while it has been noticed that eosinophilia occurs specially in bronchial asthma, bone affections, such as sarcoma of bone and osteomalacia, in skin affections, such as pemphigus and psoriasis, in certain diseases of the female genitalia, and in some sympathetic nerve diseases, such as exophthalmic goitre.<sup>1</sup>

<sup>1</sup> Anyone wishing a fuller account of this subject will find it in *The Clinical Examination of the Blood*, by Cabot (Longmans, Green & Co., 1897); *The Blood: How to Examine and Diagnose its Diseases*, by Coles

## VI.—THROMBOSIS OF THE MESENTERIC VEINS IN ENTERIC FEVER.

BY DR. T. K. MONRO AND DR. CHARLES WORKMAN.

T. H., steelworker, æt. 18, was admitted to the Royal Infirmary, under the care of Dr. Monroe, on 21st February, 1900, complaining of pain in the left side. About a fortnight previously, whilst at his work, he had been suddenly seized with giddiness and severe pain in the head and abdomen. On the next day he felt weak and began to cough, and to suffer, on coughing and on breathing deeply, from a sharp pain on the left side of the chest. Two days before admission he got out of bed, and managed to work for an hour and a half, but had then to take to bed again. On admission, the symptoms included a severe stitch in the side; cough, especially troublesome at night; night sweating, headache, anorexia, constipation, and a furred tongue. The abdominal pain had ceased.

The temperature that evening was  $104^{\circ}$ , pulse 96, and respirations 28. For a considerable time thereafter the feature of the case—with the exception of the pyrexia, which was of a rather irregular type—continued to be of a very negative character. Thus, in the case of the lungs, the only abnormal signs were an occasional dry râle and a distant and rather fine crepitus over the lower part of the left side. The latter was heard repeatedly in the course of the illness, and, as it was associated with the stitch in the same side, it was attributed to pleuritic friction. It is noteworthy, however, that at the autopsy absolutely no evidence of present or past pleurisy could be detected. The examination of the heart and of the urine was also negative.

About a week after admission a few rose spots were noted on the back. There was a good deal of sweating; the pupils were large; the bowels were constipated; cough continued; there was the least possible tenderness in the abdomen; pneumococci were found in the sputum. Examination of the blood by Widal's method gave a negative result.

About a week later (9th March) an intestinal evacuation had the colour of pea-soup. There was still slight abdominal tenderness. There was no obvious enlargement of the spleen.

(Churchill, 1898); and the article, "Die Anæmie," in vol. iii of Nothnagel's *Specielle Pathologie und Therapie*, by Ehrlich and Lazarus, which, since this paper was written, has been published in an English dress, by Myers, under the title *The Histology of the Blood—Normal and Pathological* (Cambridge University Press, 1900). In these volumes, also, a full bibliography will be found.

On the 13th March, after the bowels had been loose for a couple of days, some dark blood was observed in a motion. The tongue was clean. There was still tenderness in the lower part of the abdomen, especially towards the left side. Epistaxis was an occasional symptom. Shortly afterwards talkative delirium set in, especially at night. The pea-soup evacuations continued, and urine and fæces were passed into the bed.

On the 21st March a large quantity of blood was passed into the bed. There was marked pallor and abundant perspiration, and the tongue was dry and hard. There was marked trembling of the hand.

On the 22nd a soft solid evacuation, which contained little or no blood, included a solid mass, which was apparently a slough from the intestine. About half an hour later patient complained of crampy pains in the lower abdomen, said he felt faint, and drew up his legs. He was seen by Mr. Clark, along with Dr. Monro, two hours afterwards, when it was decided that the abdominal symptoms were not so pronounced as to warrant an operation. After these symptoms set in, there was a fall in the temperature, pulse, and respiration. For the next two days the general condition was encouraging; for instance, patient was able to ask for and use the slipper. The splenic dulness was considerably increased.

On the evening of the 24th he became subject to attacks of extremely severe abdominal pain, associated after a time with sickness. Moderate fever was present. The pain was all over the abdomen, but was specially severe just below the umbilicus; it was not affected by slight pressure with the hand. The abdomen was moderately distended. In the course of the ensuing night three evacuations were passed, one of which was bloody.

Patient died from exhaustion on the 25th March, or about six and a half weeks from the commencement of his illness.

*Post-mortem* (27th March).—The body was greatly emaciated. On laying open the peritoneal cavity, the cæcum, with about 20 inches of the ileum and the ascending part of the colon, was seen to stand prominently forward in the lower part of the abdomen, and to be in a condition of intense venous engorgement, so that these parts seemed almost in a gangrenous condition. The tissue, however, was of fairly firm consistence, and not necrosed, the appearance of gangrene being only in colour, and due to the great congestion. Some of the arteries of the mesentery leading to that part of the



bowel were examined; but these appeared empty and healthy, while the mesenteric veins were filled with blood-clot. It would therefore appear that the venous hyperæmia was the result of thrombosis of the mesenteric veins. The patches of Peyer were generally ulcerated and sloughing, and many ulcers were present also in the cæcum. These had undergone necrosis, so that in some the peritoneal coat was exposed, though no actual perforation could be found, and there was no fæcal matter in the peritoneum.

The spleen and lymphatic glands were much enlarged and congested; the liver was pale and soft, showing cloudy swelling; the stomach, duodenum, jejunum, and pancreas were healthy; the heart was a little atrophied, but otherwise healthy; the lungs were very emphysematous.

The *post-mortem* appearances in this case were characteristically those of enteric fever, with the addition of a most remarkable engorgement, especially of the mucous membrane of the lower part of the ileum and of the cæcum.

Dr. Workman was at first inclined to think that this was an infarction resulting from embolism of the mesenteric artery; but, on careful examination of its branches, he could find no sign of this, and as the mesenteric veins were found engorged and filled with blood-clot, he concluded that the condition was one of venous congestion, the result of thrombosis of the mesenteric veins. There was no evidence of a general necrosis of the congested portion of bowel, and, though it was considerably swollen, it was of normally firm consistence. The vermiform appendix showed similar engorgement, and a number of typhoid ulcers were present in it.

*Note.*—The rarity of thrombosis of the mesenteric veins in enteric fever may be judged of by the fact that it is not alluded to by Murchison in his treatise on the *Continued Fevers of Great Britain*, by Keen in his work on the *Surgical Complications and Sequelæ of Typhoid Fever*, or by Hare in his monograph on the *Medical Complications, Accidents, and Sequelæ of Typhoid or Enteric Fever*. Infiltration of the mucous membrane of the small intestine with bloody fluid, with a reddish-black colour, has been noted, generally in cases associated with hæmorrhage (*Continued Fevers of Great Britain*, third edition, 1884, pp. 616, 617).



MEETING XII.—20TH APRIL, 1900.

DR. CHARLES WORKMAN *in the Chair.*

I.—CASE OF ENDOCARDITIS OF THE TRICUSPID AND MITRAL VALVES.

BY DR. CHARLES WORKMAN.

The patient, a girl, aged 16, a machinist, had been under the care of Dr. J. Lindsay Steven, and the *post-mortem* was made on 20th April, 1900. There was anasarca and ascites, with great œdema of the lower extremities; the pleuræ were very adherent to the pericardium, and this to the heart wall. The aortic and pulmonary curtains were competent, and, except for a little thickening of the aortic, they appeared healthy. The tricuspid curtains were greatly thickened, and the orifice had a circumference of only 70 to 80 mm., instead of 135 mm. The mitral also showed great thickening, and measured only 60 mm. Both auricles were greatly enlarged, and the left had a number of calcareous plates in its wall. Both ventricles were dilated and hypertrophied, so that the heart weighed 20 oz. The aorta and the coronary arteries presented healthy characters. The liver was in a condition of monolobular cirrhosis, and much congested; the spleen and the left kidney showed infarctions; the spleen was somewhat enlarged; and all the abdominal organs were congested.

From the fact that the tricuspid valve was so markedly affected by the chronic endocarditis, it is probable that the disease had commenced during intra-uterine life. In my experience, we only rarely find the tricuspid involved in a chronic endocarditis.

The hypertrophy of the heart was partly accounted for by the pericarditis, which was well marked.

II.—TWO CASES OF EXCISION OF THE GASSERIAN GANGLION FOR EPILEPTIFORM NEURALGIA.

BY DR. J. CRAWFORD RENTON.

Dr. Renton read notes of two cases of excision of the Gasserian ganglion for epileptiform neuralgia, with recovery

in both cases. The high method of operation was adopted by trephining the temporal bone, and raising the dura carefully down as far as the ganglion. The hæmorrhage was considerable, but by patience it was controlled by gauze pressure.

The middle meningeal artery gave no trouble in either case; the superior and inferior maxillary divisions of the fifth nerve, coming from the ganglion, were drawn out of their foramina and divided, the ganglion being raised and pulled away. The ophthalmic division of the fifth was not interfered with, as troublesome eye-symptoms are apt to follow its division. Both patients made good recoveries, it being twenty-two months since the one operation, and thirteen months since the other.

Both cases illustrated the typical appearances of epileptiform neuralgia, as many as twenty attacks of intense pain and spasm taking place in an hour, and requiring 3 to 4 grains of morphia to subdue them.

Dr. Renton urged an earlier resort to this operation, as it affords such complete relief, and the small amount of paralysis and anæsthesia left does not inconvenience the patient.

### III.—ON SOME OF THE DIFFICULTIES MET WITH IN THE SURGICAL TREATMENT OF GALL-STONES, ILLUSTRATED BY TWO CASES.

BY DR. G. H. EDINGTON.

I have thought that the following communication might not be without interest to the members of the Society as an illustration of some of the difficulties which may be met with in the surgical treatment of gall-stones.

Two cases may seem a small text on which to found remarks, but I trust that the facts which I am about to record may prove, in your opinion, sufficient to justify my bringing them before you.

Amongst the ideal conditions in operating for gall-stones are those in which there are either no, or at least trifling, inflammatory adhesions, and in which the gall-bladder projects sufficiently to enable one to suture it to the parietal peritoneum. The absence of this latter condition was a drawback in my first case, while my second patient exemplified the difficulties caused by the presence of dense inflammatory adhesions.

The presence of both of the ideal conditions above mentioned enables the surgeon to make a thorough examination of the bile-ducts as well as the gall-bladder, and, if he deem it

necessary, to attach the fundus of the latter organ to the parietal peritoneum, and so provide for the subsequent escape of bile on to the surface, without risk of soiling the general peritoneal cavity. It may be objected to this latter statement that "pure bile does not necessarily set up peritonitis, as is shown in cases of injury to the normal biliary passages, with escape of bile into the peritoneum, but," to continue the quotation which I have just made from Naunyn's well-known work,<sup>1</sup> "in these cases of cholelithiasis the bile is, usually at anyrate, no longer pure, but infective."

Notwithstanding this, it has been the experience of some that, in cases where the gall-bladder is so much contracted as to make its suture to the parietes of the abdomen an impossibility, intra-abdominal tension makes it easier for the bile to pass away directly through a tube inserted into the fundus of the organ than to enter the cavity of the abdomen, and that within twenty-four to forty-eight hours plastic peritonitis shuts out the drainage-tube from the general peritoneal cavity. This statement, which is taken from Mayo Robson,<sup>2</sup> is, on the same page, accompanied by the remark that he himself has great faith in the method of packing round the tube with iodoform gauze. But, apart from the contracted condition of the bladder, the use of iodoform gauze as a packing is a help in such a case as my first, where a rent was made in the bladder wall close to the commencement of the cystic duct. The tacking down of parietal peritoneum to the fundus of the bladder, or the fixation of a portion of omentum round the tube, are methods which have also been recommended. The "ideal" method is to close the bladder and drop it back into the abdomen, but this can only apply to cases in which you can be certain that the ducts are not obstructed, and, as will be seen, in neither of my patients was this so.

Coming to the question of adhesions, should these be slight they may not give one any difficulty, as I found in Case I, and in the final operation in Case II: but when dense, as, for example, after not very remote inflammation, they may prove a source of considerable worry to the operator, and this in more ways than one. In the first place, they not only alter the relation of the parts, but may almost, if not quite, obscure the gall-bladder; while, secondly, they may prevent an examination of the ducts, a procedure which is an essential in the technique of the operative treatment of cholelithiasis.

<sup>1</sup> *On Cholelithiasis*, New Sydenham Society's translation, 1896, p. 89.

<sup>2</sup> *Diseases of the Gall-Bladder and Bile-Ducts*, 1897, p. 125.

A contracted gall-bladder is very frequently met with in cholelithiasis; so much is this the case that its occurrence has been looked on in cases of chronic jaundice as diagnostic of obstruction by gall-stones rather than by a new growth.<sup>1</sup>

Mayo Robson<sup>2</sup> is of opinion that this contraction is due to the fact that stones seldom cause complete obstruction, and therefore there is not sufficient backward pressure to fill up and distend the bladder. But he recognises also as factors in the process that the muscular coat of the viscus contracts in efforts at expelling the obstruction. This contraction becomes in the long run continuous, and, accompanying inflammation fixing the bladder, the latter atrophies.

As regards the adhesions of the gall-bladder to the neighbouring viscera, these are the results of an inflammatory process in the walls of the bile-passages. But when the adhesion is widespread and dense, there has generally been noted that at a recent period prior to the operation the patient has suffered from an attack in which the pain has been of more than ordinary severity, and which, taken in conjunction with the general symptoms, resembles what occurs in perforation of an abdominal viscus by ulceration.

Such a history, coupled with the appearances met with at the operation, has led to the expression of the view that a perforation of the gall-bladder or ducts has probably taken place, and that the adhesions are the result of a conservative peritonitis.<sup>3</sup> That such adhesions, if seen at a period sufficiently remote from the inflammatory disturbance on which they depend, may alter in appearance very much, we know from an examination of Case II, in which, at the secondary operation, they formed very inconsiderable bands.

*Incision.*—The incision which I used was, in the first place, a vertical one of 4 inches in length, in the right linea semi-lunaris, but it was found necessary to supplement this by an oblique one running outwards from above the middle point of the vertical wound and parallel to the costal margin.

The vertical incision, sufficient when the bladder is not retracted, did not, I found, give easy access to a deeply-situated bladder or to the ducts.

Without further remarks, I will now give a short account of my two cases, drawing attention to the salient points in each.

<sup>1</sup> Naunyn, p. 104.

<sup>2</sup> *Loc. cit.*, p. 132.

<sup>3</sup> Rutherford Morison, *Scottish Medical and Surgical Journal*, 1899.



CASE I.—*Contracted bladder—Removal of calculi—Remainder treated by olive oil injection—Recovery.*

I was asked to see Mr. B., aged 55, by Dr. Crawford, of Hamilton, in November, 1897. The patient had suffered from intermittent jaundice, with attacks of colic, for the preceding six months. He was, when I saw him, intensely jaundiced and very weak. Palpation of the abdomen showed rigidity of the right rectus muscle. Chloroform was administered, but resistance was still felt in the right hypochondrium. No prominence as of distended gall-bladder could be felt. An incision was made in the right linea semilunaris through a very fat abdominal wall. The gall-bladder was found distended and of globular shape, but the fundus was about 1 inch in from the margin of the liver. There were some adhesions between the bladder and the transverse colon. A small nodule was present on the surface of the quadrate lobe, and suggested new growth. No stones could be detected in the bladder or ducts by external examination. On picking up the bladder with artery forceps it ruptured, and a quantity of greenish bile escaped. The tear was enlarged, and the finger introduced into the cavity and down towards the ducts. After some search, a large stone of conical form was felt at the junction of the cystic with the common duct, and was removed through the bladder along with numerous small calculi (sixteen in all). Calculi were also felt lying in pouched recesses near the neck of the bladder, and one in the hepatic duct; this last was very soft, and was easily indented by the finger-nail. It was found impossible to remove the calculi from the pouches, as whenever one was got out of its recess it fell into another. In the course of the manipulations a stone of considerable size was forced out through the wall of the bladder near the neck. A large unperforated rubber tube was inserted into the bladder through the wound in the fundus, and iodoform gauze was packed round the bladder externally, as it was impossible to locate and close the rent near the neck. The vertical incision was closed by a single row of silkworm gut sutures passing through the entire thickness of the abdominal wall. The transverse incision, which it had been found necessary to make during the progress of the operation, was left open, and through it came the tube from the bladder and the ends of the gauze packing. It should be mentioned that on the upper (hepatic) portion of the bladder wall there was a considerable thickening, somewhat softer than hepatic tissue; this the exploring finger lacerated somewhat, but



whether it was thickened bladder wall or softened liver tissue I am unable to say definitely.

On the sixth day some of the gauze packing was carefully withdrawn, and again on the eleventh, and the remainder was removed on the seventeenth day, a perforated rubber tube being inserted into the cavity so left. From this bile flowed more freely than from the tube in the bladder. One week later there was still a plentiful discharge of bile from the bladder, the stools were whitish in colour, and the jaundice (which had been diminishing) became as marked as formerly. There was also pain complained of in the region of the bladder. At my suggestion the patient's doctor injected olive oil through the opening in the fundus of the gall-bladder. This was followed by cessation of the pain, and the motions were thereafter well coloured. Four days after the injection the flow of bile from the fistula ceased.

The patient subsequently made an uninterrupted recovery, and when I saw him in the end of February, 1898, he was well and strong. The cicatrix was sound, but on his coughing I could feel friction in the neighbourhood of the gall-bladder, and he told me that he had an occasional "stitch" in this region. The stones, which I now show you, weigh, in dried condition,  $91\frac{1}{4}$  grains. They belong to the variety known as laminated cholesterin.

The points of interest in this case are—

(1) The impossibility of attaching the bladder to the parietal peritoneum or of stitching the rent in the wall of the viscus, and the use of iodoform gauze packing in this connection;

(2) That the stones were not discovered until the bladder had been opened;

(3) The pouches at the neck of the bladder, containing stones which could not be extracted (these were evidently exaggerations of the hollows between the folds which are normally present in the mucous membrane in this situation);

(4) The nodule on the under surface of the liver, thought at first to be a tumour, but which was probably a biliary concretion;

(5) The thickening in the roof of the bladder was most likely inflamed mucous and submucous coats;

(6) The solvent action of olive oil on the calculi which were left is of therapeutic interest.

CASE II.—*Cholecystotomy for gall-stones—Dense adhesions—Calculi in ducts treated by olive oil injections—Subsequent choledochotomy—Recovery.*

Miss H., aged 36, was sent to me in January, 1899, by Dr. J. R. Gibson, of Paisley, with a history of the occurrence of biliary colic at intervals during the preceding ten years.

The attacks of colic had become more frequent since June, 1898. Before this time they had occurred about once or twice a month, but latterly they have even been so frequent as once or twice a week, and ten days before my seeing the patient they had culminated in a very severe bout of pain, accompanied by vomiting. While vomiting, the pain had suddenly become very much worse. Although neither she nor her friends had ever observed any jaundice, Dr. Gibson noticed a distinct, though slight, icteric hue following the attack of pain. During the attacks he had also observed some distension of the gall-bladder.

Her digestive powers were not very good; she was often troubled with "acidity" in the stomach, accompanied by sour mouthfuls, and her bowels were inclined to be constipated.

On my seeing her she presented a well-nourished appearance, although by no means fat. There was tenderness complained of, and some resistance felt on palpating over the region of the gall-bladder, but this organ could not be felt, and percussion did not show any evidence of its enlargement.

Further examination elicited complaint of tenderness in the right iliac region, and as there was swelling and dulness here which could be traced up towards the liver, it was not quite clear that the severe attack last experienced might not be appendical in origin.

On the 28th January, 1898, assisted by Dr. E. A. Gibson, I opened the abdomen by a vertical incision in the right linea semilunaris, extending 4 inches down from the ninth costal cartilage. There was little fat, either subcutaneous or sub-peritoneal, in the abdominal wall. I found the transverse colon bound to the margin of the liver by dense adhesions, and a little further down the adhesions extended between the omentum and the abdominal wall.

I could not at first make out any appearance of the fundus of the gall-bladder, but on examining carefully in a line vertically downwards from the cartilage of the ninth rib I found, buried in connective tissue, a small rounded projection extending about 1 inch beyond the liver margin. This I opened tentatively without disturbing the adhesions, and it proved to be the fundus of the gall-bladder, the walls of which

were much thickened. As the bile flowed out it carried with it many small concretions of a dark green colour on to the sponges which I had packed round the bladder.<sup>1</sup> The finger, introduced into the viscus, felt through a fold of mucous membrane at the neck a large stone, but as manipulation proved unavailing, and as the patient was too weak to permit of the separating of the adhesions to expose the outer surface of the bladder and the ducts, it was left to be treated by the injection of olive oil.

A tube was inserted into the bladder, the fundus of which was attached by suture to the parietal peritoneum. The abdominal wall was then sutured in layers. Injections of olive oil were made through the tube into the bladder on the 1st, 3rd, 5th, 6th, and 8th February. The quantity injected was in each case about one fluid ounce, and its introduction was accompanied by considerable deep-seated pain, so that its employment was not persisted in. The tube was left out on the twelfth day after the operation, and the fistula closed rapidly thereafter.

She returned to Paisley at the end of February. The wound was healed, but she occasionally complained of slight pain in the region of the incision. This was thought to be due to the implication of some of the lower intercostal nerves in the scar, although, after being up for some time, she occasionally felt the pain as if situated more deeply.

Her dyspeptic symptoms were much improved.

Shortly after leaving the Home she again began to have attacks of the biliary colic, and these increased so much in severity and frequency that she agreed to a second operation. This was done in the Home in the middle of July, 1899. The old wound was carefully opened up, and the gall-bladder and colon were detached from the abdominal wall. It was then found that the previously dense adhesions between the colon and the liver had become very much altered in character, being more of the nature of thin drawn-out bands. These were divided, as well as numerous adhesions between the gall-bladder and the pyloric end of the stomach. In dividing the adhesions the finger was retained in the bladder as a guide to its walls. A mass was felt at the junction of the cystic and hepatic ducts, but it could not be forced back into the bladder. The abdominal incision was now increased by the addition of a transverse cut, and the cystic duct was thereafter incised longitudinally, and two large, blackish, soft stones

<sup>1</sup> These, which were mostly of the size of a split-pea, were forty-five in number.

were extracted. The larger of the two, about the size of a small walnut, was removed piecemeal, the smaller of the two entire. The wound in the duct was stitched, as also was that in the fundus of the bladder, but a gauze drain was laid in from the surface to the region of the duct incision. The abdominal wall was sutured in layers. There was more or less discharge of bile for fourteen days after the operation, but this ceased when the gauze drain was finally removed.

She went home well in four weeks, and has since remained so, with the exception of occasional turns of her old complaint, "acidity."

It should be mentioned that for some days after both operations she had retention of urine, requiring the use of the catheter.

The stones removed from the duct present the appearance of bilirubin-calcium. They are hard and brittle, and have a tendency to crack, and weigh (dry) 32 grains.<sup>1</sup>

I have noted in this case the following points:—

(1) The difficulty of locating the bladder owing to the extent and density of adhesions (these were probably associated with a rupture of the viscus during the severe attack of colic mentioned above);

(2) The inability to examine the ducts owing to her weak state on the table;

(3) The use of olive oil proving futile, even when injected directly against the calculi;<sup>2</sup>

(4) The altered appearance of the adhesions, thinning-out being noticed at the secondary operation, six months later than the primary one;

(5) Digestive troubles, doubtless due to the presence of adhesions;

(6) Attachment of the bladder to the parietal peritoneum. This was done to lessen the chances of the fistula becoming permanent, an event which might have happened had the viscus been sutured to the more superficial layers of the abdominal wall.

<sup>1</sup> I have named the stones in both cases after a comparison with the specimens in the Hunterian Museum in the University, a comparison which I was enabled to make through the kindness of my friend, Dr. J. H. Teacher, the under keeper.

<sup>2</sup> I have, since the above was written, tested the solubility of small fragments of the calculi in olive oil. The laminated cholesterol specimen was, after twenty-four hours' immersion in the oil, and without the application of heat, softened and crumbled easily. The bilirubin-calcium specimen, however, remained unaltered.



## MEETING XIII.—4TH MAY, 1900.

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DR. W. G. DUN *in the Chair.*I.—CASE OF PROBABLE ADDISON'S DISEASE ASSOCIATED WITH LEUCODERMIA AND TUBERCULOSIS.<sup>1</sup>

BY DR. R. BARCLAY NESS.

C. L., a young woman, aged 22 years, was admitted into the Western Infirmary under the care of Sir William T. Gairdner on 25th January, 1900.

The patient was affected with a peculiar brown pigmentation of the skin, associated with pale, almost white, patches. She was anæmic, complained of general weakness and irregular menstruation. She had cough, and there was evidence of disease at the apex of the left lung, probably of a tubercular character.

The interest of the case lies in the question whether or not it can be one of Addison's disease associated with leucoderma.

The following are the details of the case from the report on admission:—

The patient is of very slight build, anæmic, and rather thin, weighing on admission only 5 stones. She said she had never been robust, but had until recently enjoyed fairly good health. In childhood the only diseases she suffered from were measles and whooping-cough.

Menstruation for the last two or three years had been irregular, the intervals varying from six weeks to two months. This function had also been frequently attended by pain in the back. This pain had often, during the last nine months, occurred at the times of her "missed periods." The last menstrual period was in April, 1899, and she thought the change in the colour of the skin began about that time, although she admitted that at the beginning she did not pay much attention to it.

She worked as a tailoress up till July, 1899, but from that time she has been unfit for work, without, however, having any definite ailment beyond a little cough. In fact, she attributed her general weakness to the work being "too much for her." Sometimes she was confined to bed for a day at a

<sup>1</sup> Shown for Sir William T. Gairdner.



time, but only, she said, because she felt tired. She admits, however, occasional attacks of sickness and vomiting. At times she has also suffered from severe pain, which she localises at a point slightly above and to the left of the umbilicus. Since the beginning of the present year she has felt weaker and less able to do anything, but still without any local trouble, except that the cough to which she has been liable since last July had, in the week or two before admission, become aggravated. It was associated for a few weeks before admission with profuse perspiration and loss of flesh.

These symptoms, in the light of the family history, were very suggestive. Though the father is alive and healthy, the mother died three years ago, at the age of 35 years, of acute tuberculosis. Of a family of eleven, five died in infancy or childhood; an elder sister is delicate; the others, so far as the patient knows, are in good health.

With regard to the pigmentation of the skin, Sir William Gairdner made the following note on 31st January:—

“In this case there is, apart from the general symptoms, a very peculiar colouration of the skin, more or less visible all over the body as well as the face, and perhaps more notable in some respects on the body (Figs. 1 and 2). On the face it presents generally the appearance of an extremely dark complexional pigmentation, which, as the patient has obviously had nearly black hair and hazel-coloured eyes, might conceivably be a normal fact, were it not that she has very distinctly the impression that it is a comparatively recent occurrence, coinciding in time and in its progress with her deteriorated health.

“It is evident that the dark pigment is not quite generalised. On the face in particular there is an area, proceeding from the upper lip and right angle of the mouth, of an inch square or less, in which the colouration is absent or very much lighter, so much so as to form a patch on the general deeper pigmentation; and, besides this, there is another area behind the brow, corresponding with what might be supposed to be shaded by the hair, but not accurately corresponding with this, of a much lighter pigmentation; and, in respect of the hair itself, it is very notable that while it is somewhat thin over the vertex, it maintains generally its black colour, while at the front, corresponding with the cutaneous patch above mentioned, there are numerous grey hairs, and even on the right side a number quite decolourised, giving more than the aspect of the senile white hairs in patches.





FIG. 1.

Showing patches of leucodermia on the arms, thorax, and abdomen, and, to a less extent, on the face.







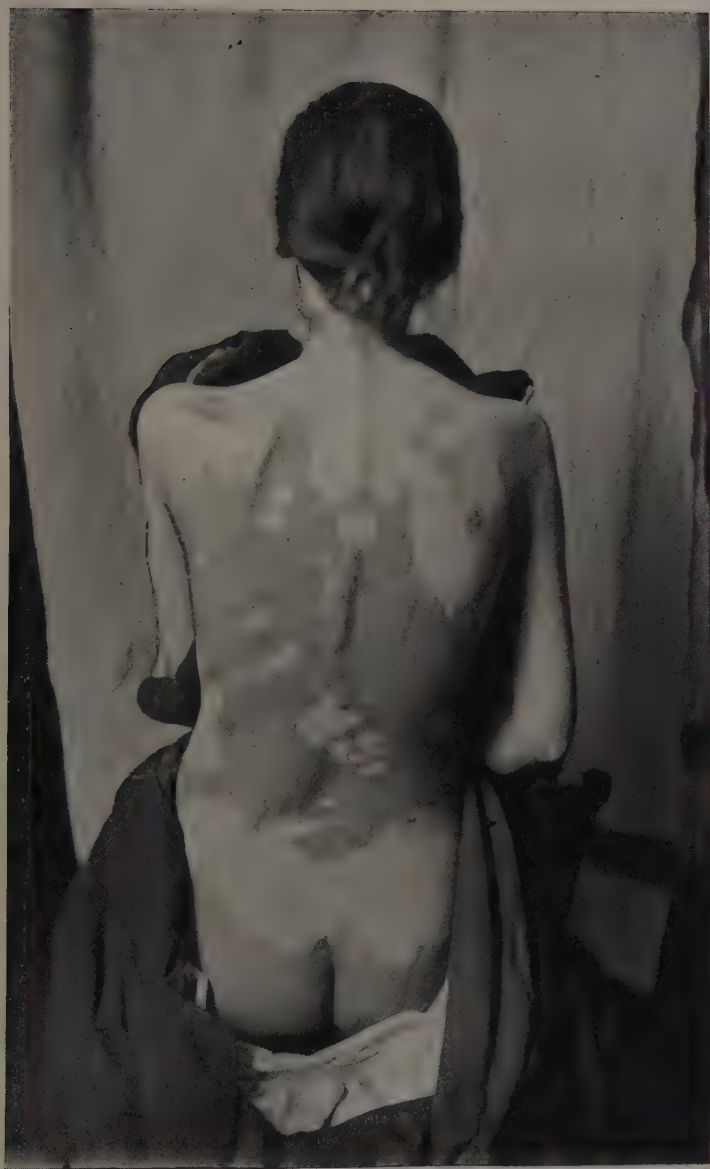


FIG. 2.

Showing patches of leucodermia on the back.



"A similar distribution of white hair, but not perhaps so strongly marked, is seen towards the occiput, far back, but in the main covering of hair towards the vertex there is no such alteration.

"Patient herself says positively that all these changes have occurred within the last nine months. Taking now the body, and, in the first instance, the right arm and corresponding side of the thorax, there are numerous leucodermatous patches in the midst of a generally heightened pigmentation, it being impossible now to determine whether the light patches correspond with the original tint of skin, or whether they are morbidly devoid of pigment: the patient's own impression is that the leucoderma and the dark pigmentation are both of them equally departures from the normal aspect of her skin, which was that of a brunette, but not nearly so dark as now.

"There is nothing else than these facts to show any morbid change; there is no desquamation, no abnormal vascularity or change in structure. The change is one in the disposition of pigment only, which, again, is entirely a question of degree, being of a kind that corresponds with the apparently natural complexion.

"Having this in view, it is rather remarkable that the nipples, which are small and evidently virgin, present not the slightest trace of an areola: in fact, taking for an inch around, they seem to be included each in a leucodermatous patch.

"On front of right arm the patches are very irregular (many nearly circular, others of very different shape), and it may be taken as a general rule that where a patch exists of tolerably well defined character in the midst of a deeply pigmented integument, the depth of pigment increases up to the edge of the patch, so as to show the latter in very strong contrast. On the right fore-arm interspersed white patches and pigmented skin proceed quite down to wrist, while the palmar aspect of hand is for the most part, if not entirely, either leucodermatous or normal, and this is more striking in thumb and forefinger, by the dorsal, and even lateral, aspects presenting small patches of leucoderma amid the pigmentation.

"It is also worth remark that each finger, though generally, like the back of hand, inclining to deep pigmentation, has a mainly leucodermatous extremity corresponding generally with the distal phalanges, but not perhaps quite exactly marked off.

"The nails are, on the whole, unduly curved, but not rigid or unduly marked. A similar description applies to the left arm and hand, only that leucodermatous patches are fewer. On the whole dorsal aspect leucodermatous patches are interspersed among deeper pigmentation. One of the largest extends from anterior superior spine of ilium nearly to dorsal spine, measuring, perhaps, 5 inches by 7 inches, of irregular form, but not otherwise differing from the smaller patches.

"On the abdomen there are also patches, but less, on the whole, than on the thorax or limbs. It is also noted that there is no relative darkening or lightening of the general tint towards the pubes.

"Leucodermatous patches are also abundant on the thighs, less so on the lower part of the legs; and exist also on the feet, though not so marked as on the hands. A similar condition exists on the back (Fig. 2)."

The other facts, with regard to physical examination, are these—

With regard to the blood, which was examined on 4th February, it was found to contain hæmoglobin to the extent of 58 per cent, while no alteration was observed either in the number or character of the corpuscles.

The first observations showed temperature to have a maximum of 99.4° F.; pulse, 100; respirations, 28 to 34.

Examination of the lungs showed that the left apex was slightly affected, probably with tubercular disease. During her residence in hospital the signs became more marked, and pointed to excavation taking place, and the probable involvement also of the right apex. These changes were accompanied by elevated temperatures, the highest of which was 102.6°; of late they have again subsided to about 100° F.

The heart presented no abnormality.

On examination of the abdomen, the hepatic dulness was found to be unusually small, measuring only about an inch in the vertical nipple line, the lower border only reaching to an inch and a half above the costal margin. The splenic dulness was not abnormal. The abdomen could be freely handled without any evidence of tenderness anywhere.

The urine was moderate in quantity, neutral in reaction, and contained neither albumen, blood, or sugar.

With these facts of the case before us, there seem to be two possible views which can be taken regarding the skin condition.

It may be a case of leucoderma pure and simple, or it may

be a case of Addison's disease associated with leucodermia, always admitting, whichever view is taken, the tubercular condition of the lungs.

Undoubtedly, the skin condition answers in all respects to the condition known as leucodermia or vitiligo. But there is, in addition, a general bronzing of the skin apart from the presence of leucodermia. This is evident in the face, neck, hands, groins, to some extent in the axillæ, distinctly so in the groins and genitals, but it must be conceded that there is no undue pigmentation of the nipples or the areolæ in the region of the umbilicus, or in the middle line between this and the pubes. There is some degree of general bronzing in the latter regions, but it is not present in excess. In the case of the nipples there is less than normal, because each is involved in a leucodermic patch. It should be mentioned, also, that there is no pigmentation of the furrows in the palms of the hands, nor is there any pigmentation of the mucous membrane of the mouth.

To some extent, then, there is present the general bronzing of Addison's disease, but the distribution of the pigmentation does not conform to the usual type, especially in connection with the presence of these leucodermic patches.

There is another important difference between leucodermia and Addison's disease in respect of subjective symptoms. In the former condition there are usually none. It is believed to be a tropho-neurosis, often appearing in patients who have had other nervous diseases, or who belong to a neurotic family, but there are no definite subjective symptoms to be associated with leucodermia itself, whereas in Addison's disease there is marked asthenia.

Now, in the present case, asthenia with distinct anæmia was certainly present to a marked extent at an early date. Further, we had, what is not uncommon in Addison's disease, a history of occasional attacks of sickness and vomiting. In putting forward the marked asthenia in support of the condition being the same as that described by Addison, it is not forgotten that the girl is suffering from phthisis, but the asthenia was present when the phthisical condition was only in the incipient stage, and, as far as her feelings go, although the tuberculous condition has made very considerable progress, the patient expresses herself as being much better, possibly the effect of treatment, and the expression of her own feelings corresponds with slight increase in weight.

In connection with the question of the association of leucodermia with Addison's disease, it is so true of this.



being so rarely associated with Addison's disease that, as a rule, it is not referred to in ordinary text-books on medicine, such as that of Bristowe, Hilton Fagge, or Clifford Allbutt.

The writers in these text-books give the usual description with regard to the distribution of the pigment being in excess in exposed parts, such as the face, neck, hands, where the pigment is naturally more abundant, as in the axillæ, groins, areolæ of the nipples, or where there is undue pressure, as in the region of the waist and over the spine of the vertebræ, but there is no reference to the occurrence of leucodermia.

Some American works, such as that of Loomis and Thomson, as pointed out to me by Dr. J. Souttar McKendrick, make a very passing reference to the condition, though there is in this work a good plate illustrating the condition.

Now, this omission in English text-books on medicine is very remarkable, in view of the fact that no less an authority than Addison himself described the condition. In his monograph, entitled *On the Constitutional and Local Effects of Disease of the Suprarenal Capsules*, in which he gives notes of eleven cases, he refers, in his general description of the condition, to the fact that the deep pigmentation may be in patches, and in Case VI he specially notes this feature of the case. Further, he gives an admirable plate depicting the condition. There can therefore be no doubt about Addison's own view of the matter, but Sir Samuel Wilks, to whom is due the great credit of following up Addison's discovery, by gathering together all the cases he could, and in publishing the result of his work in *Guy's Hospital Reports* (1859-62-65), insists very strongly on the gradual blending of the deeply pigmented parts with the parts not so deeply pigmented. "Without, therefore," he says, "denying that the colour may sometimes occur in patches, we think we are correct in saying that all experience has hitherto shown that the discolouration has been uniform over the whole surface of the body."<sup>1</sup> He points out that the plate published in Addison's monograph was not taken from a case where a *post-mortem* examination was obtained.<sup>2</sup> But it should be noted that the important case (VI) described by Addison did come to a *post-mortem*, and it was found that the suprarenal capsules were diseased. In this case leucodermia was present, but unfortunately no sketch was taken of the appearance of the skin, so when another case of the same kind came under Addison's notice, which, he says, was practically identical in appearance to

<sup>1</sup> *Guy's Hospital Reports*, third series, vol. v, p. 95.

<sup>2</sup> *Guy's Hospital Reports*, third series, vol. v, p. 94.

the one in which he had had the *post-mortem*, he had a drawing made, and this he put in to represent the condition which was present in the first case (VI). Apart from the plate, however, this case is complete in itself, inasmuch as a full description is given. But Wilks persistently holds to his own view, so that, in Reynolds' *System of Medicine* (1879, vol. v, p. 359) there is found the following expression of his opinion:—

“In all these parts where the colour is darker it is gradually shaded off into the surrounding skin; in no case does it cease abruptly or is the pigmentation in circumscribed patches. To the inexperienced, such instances of discoloration in patches surrounded by pale skin are often regarded as cases of Addison's disease; but they are purely local affections and examples of leucoderma.”

In spite of the position of Wilks, Gairdner has all along held to the view originally expressed by Addison. He has seen cases which suggest that Addison was possibly, in this respect, right after all.

He saw, in consultation, the same case as is described in Professor M'Call Anderson's book on *Diseases of the Skin*, a case in which the diagnosis was proved to be correct by *post-mortem* examination.

This case was made the subject of some remarks by him in a discussion on Addison's disease, which followed a paper read by Dr. Greenhow, at the International Medical Congress held in London in 1881. These remarks are briefly recorded in the *Transactions*,<sup>1</sup> and are as follows:—

“I will proceed to refer to a case which has occurred to me in private practice, and which, though not involving any question of doctrine as discussed in Dr. Greenhow's elaborate and admirable paper, appeared at the time, and still appears, to present questions of fact, and of legitimate inference from the facts, which the present occasion seems an almost unique opportunity for answering. In this case, which was brought under my notice at an advanced period of the disease, I had no doubt or difficulty at all in recognising both the constitutional and the local symptoms of Addison's disease in a marked form, and the prognosis accordingly was exceedingly grave. In this case death took place, and a *post-mortem* examination showed, as regards the suprarenal capsules, exactly the appearance figured in Dr. Greenhow's drawings. The only point which gives to this case special importance

<sup>1</sup> *Transactions of the Seventh Session of the International Medical Congress, 1881, vol. ii, p. 74.*

is the fact that it was seen at a somewhat earlier period by an eminent dermatologist, Professor McCall Anderson, who pronounced it a case of leucoderma, as it undoubtedly was, the peculiar pigmentation characteristic of Addison's disease being associated with well-marked circular leucodermatous patches on the wrists, hands, scrotum, &c., around which the peculiar darkening from pigment flowed, as it were, diffusely over the general surface, being specially dark immediately around the circular pale patches.

"Now, the question suggested to me by this case is, whether the association in question was purely accidental, or whether there is to be admitted a form of Addison's disease in which the pigment is so irregularly disposed: and as, in the earlier stages of the controversies in London about the disease, Dr. Wilks has been led to disown a case in Dr. Addison's own book, on the ground chiefly of the irregular type of the pigmentation, it appears to me not superfluous to bring up this detail in connection with the general question."

The case above referred to is recorded in full, with an account of the *post-mortem*, in Professor McCall Anderson's treatise on *Diseases of the Skin* (second edition, p. 32), where the author endorses the opinion that leucoderma may be associated with Addison's disease in these words—"It is right to mention—and this fact is not sufficiently well known—that the discoloration in Addison's disease may be of a patchy character, and identical with that met with in vitiligo."

Byrom Bramwell<sup>1</sup> also admits the possible association of the two conditions; and refers to a case of his own of supposed Addison's disease with leucoderma, not, however, verified by *post-mortem* examination.

It may be of some interest to refer also to a case published by Dr. Hawthorne in the *Transactions of the Medico-Chirurgical Society of Glasgow* (vol. i, p. 190). This case presented the typical characters of leucoderma, and the question was raised and discussed as to whether it could possibly be a case of Addison's disease, but that diagnosis was set aside on account of the fact that "the patient presented none of the constitutional symptoms of Addison's disease, and the absence of these, together with the special features of the pigmentary distribution, rendered it highly improbable that there was any disease of the suprarenal capsules."

To return to the consideration of the case before us, it is probably one of Addison's disease, but one cannot be dogmatic in the matter at this stage. The facts in support of the

<sup>1</sup> *Atlas of Clinical Medicine*, vol. i, part 2, p. 62.

diagnosis have been recorded, but it must be admitted that many facts which throw doubt on the diagnosis may be enumerated, *e.g.*—

1. Apart from the leucodermia, the absence of excessive pigmentation in the region of the nipples, the umbilicus, and from thence to the pubes. The absence of pigment in the furrows of the palms of the hands.

2. The absence of pigmentation in the mucous membrane of mouth.

3. The advanced condition (at the present time) of the tubercular lesion of the lung. Advanced phthisis is uncommon in association with Addison's disease (Greenhow), though a case published by Dr. Hawthorne, in conjunction with the one already referred to, showed at *post-mortem* the presence of cavities in the apices of both lungs.

4. Lastly, there is the possibility of the asthenia and anæmia depending on the tubercular condition of the lungs.

With regard to the treatment, at first this was of a general kind. The patient was kept in bed, and served with light diet. This was supplemented with malt and cod-liver oil. When necessary, cough was relieved by pulmonary sedatives.

Special treatment was also resorted to, tabloids, each containing 5 grains of suprarenal gland substance (B. W. & Co.), being given; on 29th January, three daily; 8th February, four daily; 14th February, six daily.

The effects of the treatment were not very definite—

1. She expressed herself as feeling much better.

2. She gained half a stone in weight.

3. She was able to take food better.

4. She was able to get up out of bed and go about for half the day.

5. No distinct alteration in the character of pigmentation occurred.

6. The quantity of urine increased latterly by about 10 oz. per day, accompanied by a slight rise in specific gravity from 1014 to 1018, possibly the result of increased blood pressure resulting from administration of suprarenal tabloids.

7. No variation in pulse or respiration was noted.

The fact that the treatment has not been markedly successful cannot be wondered at when it is remembered that the girl is suffering from advancing tubercular disease. These are just the cases where treatment by suprarenal gland substance has so often very little effect, but, although this is a common experience in the treatment of Addison's disease by this



special gland substance, and contrasts very strongly with the success observed in the treatment of myxœdema by "thyroid," yet we are on pretty sure ground as regards supplying to the system some substance similar to that secreted by these organs, whether this acts in destroying certain substances which have collected in the blood or supplies certain essential to the organism.

In this case, as has been pointed out, non-success may be the result of the progressive tubercular disease. Where this is absent, many cases improve under this treatment. A case lately under the care of Sir William T. Gairdner did well, and is now in good health, the treatment being carried on at intervals. The patient has been kept under observation by Dr. Carslaw.

Cases the result of traumatism, and giving rise to hæmorrhage into the gland structure and destroying its function, respond to this special treatment. Professor Stockman has told me of such a case which he has under his observation.

In giving an account of Sir William T. Gairdner's case, I have to acknowledge also my indebtedness to Dr. Watson, late house physician in the Western Infirmary, who wrote the first report, and Dr. Smith, who took the photographs from which the illustrations are reproduced.

In conclusion, it may be stated that shortly after this communication had been made to the Glasgow Medico-Chirurgical Society on behalf of Sir William T. Gairdner, he himself made a short reference to the same case in a lecture<sup>1</sup> delivered at the Medical Graduates' College and Polyclinic, London, on 30th May, 1900, and raised the question as to the possible association of leucoderma with Addison's disease. Thereafter a letter appeared in the *Lancet* of 28th July from Sir Samuel Wilks. In the following number of the *Lancet* (4th August) will be found Sir William's reply.

## II.—CASE OF FRIEDREICH'S DISEASE, WITH ATROPHY IN THE LEFT LEG.

BY DR. W. K. HUNTER.

J. M., aged 15, was admitted to Ward 7 on 9th April, 1900, complaining of loss of power in the legs and difficulty in walking.

<sup>1</sup> "Clinical Memories," a lecture by Sir William T. Gairdner, reported in *Clinical Journal*, 27th June, 1900.



The parents date the illness from the time patient was 3 years old, but it was not till he reached the age of 7 that the symptoms became in any way prominent. He began to walk when 2 years old, and at that time he is said to have been very active on his feet. Then he seems to have had some illness, probably rickets, for he ceased to walk, and, indeed, could not stand; but a year later he was walking again fairly well. It is only recently that he has again had so much difficulty in walking.

The father thinks that the one leg developed better than the other, and he says he has noticed the left thinner than the right for the past seven years. He says, too, that the present condition of knock-knee is quite recent. Some three or four years ago the heels began to be drawn up, and on this account an operation was undergone in the Western Infirmary. The dorsal curvature has been noticeable for at least three years.

Patient seems to have got on well at school, being quite intelligent and having a good memory. His writing, however, was bad, owing, he says, to a shaking in his hand, and on this account he was not permitted to pass the fifth standard.

The general health is said to have been fairly good. Patient had scarlet fever, measles, and whooping-cough in early childhood. There have been no convulsions. For the past four or five years he has had a certain degree of deafness, and this has steadily been getting more pronounced.

*Family history.*—Father and mother are alive and well. Patient is one of six children, two of whom died in infancy (only a few weeks old). The other three (a boy 18, a girl 10, and a boy 5) are alive and in good health. An uncle was born wanting a hand, but other than this there is no history of deformity or of nervous ailment among any of the relations.

*Present condition.*—The patient has a somewhat vacant expression, the lips being constantly kept apart, and the lower lip allowed to droop. From time to time a slight involuntary tremor or spasm is noted in the muscles at the angle of the mouth and in the muscles of the lower lip. The head, too, presents certain slight and ill-defined movements, as if there were difficulty in its being held quite steady. There is no atrophy of any of the muscles of the face, and the voluntary movements of these muscles seem normal. There is no nystagmus, nor paralysis of any of the muscles of the eyeball. The palate is highly arched. Dentition is fairly complete, except that the two front incisors of the upper jaw are completely rotted away. The patient speaks with a lisp, but

this is probably due to the loss of these teeth, and the speech otherwise is unaffected.

The head tends to fall forwards on to the chest, but there



FIG. 1.

J. M., æt. 15.

seems to be no paralysis of the muscles of the neck, for the head can readily be retracted, and, indeed, it can perform all its ordinary movements. As the patient sits in bed there is a marked general dorsal curvature, which does not disappear as

he attempts to hold himself straight or as he lies on his face. When he stands, a lumbar curvature (lordosis) also becomes prominent. In addition to these antero-posterior curvatures,

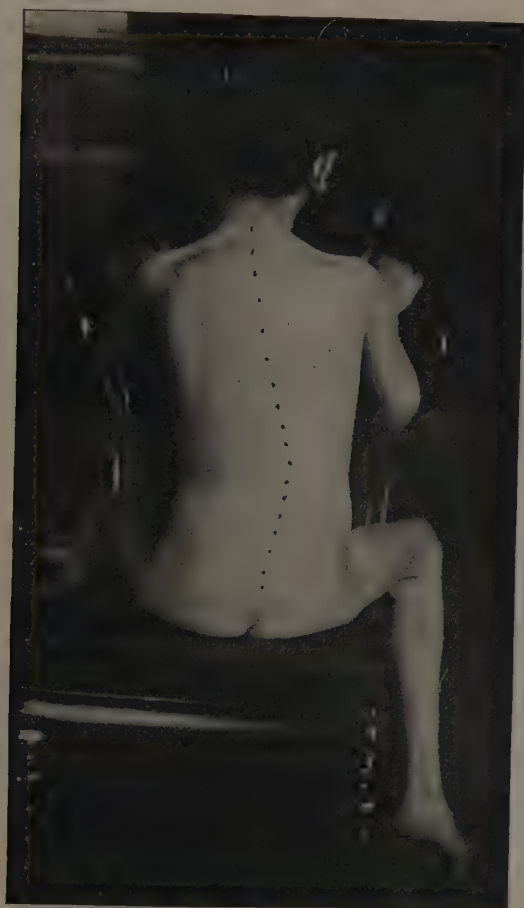


FIG. 2.

J. M., æt. 15.

there is a lateral curvature, most marked in the lower dorsal region, the convexity being towards the right. The lower portion of the chest is somewhat pigeon-shaped.

There is no evidence of atrophy or paralysis in any of the

muscles of hands, arms, shoulders, or trunk. There seems, however, to be some inco-ordination in the arms, especially when the eyes are shut, for the patient has difficulty in picking up pins and other small articles, and he never succeeds in touching accurately the point of his nose. Indeed, there may be said to be a lack of precision in all the movements of the arms, and although no definite tremor is present, a certain unsteadiness is apparent in the hands as the patient holds them out in front of him. He writes slowly and very laboriously, seeming to use all the muscles of his hand so as to steady the pencil. The muscles of the arms feel rather flabby, and no definite tendon reflexes have been obtained.

There is distinct atrophy in the muscles of the left leg, the circumference at the middle of the left thigh being 1 inch less than at the same place in the right thigh, and at the middle of the left calf  $1\frac{1}{2}$  inch less than at the middle of the right calf. This atrophy seems to affect equally all the muscles of the left leg. It is difficult to be certain whether or not there is any atrophy in the muscles of the right leg. There is a certain amount of flexion at both knee-joints, evidently the result of a permanent shortening of the hamstring muscles, for at these joints the limbs cannot be fully extended.

There is a well-marked double *pes cavus*. The movements of the legs as the patient lies in bed are apparently performed with difficulty, but how much of this is due to the contraction, and how much to inco-ordination, of the muscles it is very difficult to estimate. There seems to be a certain amount of adductor rigidity. No knee reflex nor ankle clonus has been obtained. There is no reaction of degeneration in any of the muscles, and, indeed, the electrical reactions are practically normal.

There seems to be some loss of sensation, and chiefly for that of pain, in the lower limbs; but it is impossible to draw any definite conclusion from the examination owing to the variations in the patient's replies. The error, as far as can be made out, is most marked in, and involves chiefly, the lower half of the left leg. The plantar, cremasteric, and abdominal reflexes are present, but they are not by no means active. The pupil reflexes are normal.

When the patient tries to stand up, his legs give way under him, and he requires support to prevent falling. If he falls he cannot rise again without help, and he is quite unable to walk by himself. Even with assistance progression is very difficult. The gait is cross-legged in type, each knee and foot being brought in front of the other, the foot coming to the

ground with a stamp. Patient says he has no difficulty in appreciating the true feeling of the floor.

*Remarks.*—I have classed this case as one of Friedreich's ataxy, not because it is a typical example, but because in its symptoms and general appearance it conforms more closely to that disease than to any other with which I am familiar. The patient has the facies and general attitude of Friedreich's disease. Then there is the inco-ordination in the arms and legs, the loss of knee-jerks, the dorsal curvature, and the double *pes cavus*. On the other hand, however, the case is isolated, there is no nystagmus, the speech is not elisive, sensation is affected, and there is atrophy in the muscles of one leg. Of these negative symptoms, the only one to cause remark is the last; for the other symptoms—history of heredity, nystagmus, affection of speech, and intact sensation—are by no means constantly present in all cases of Friedreich's disease. But I am somewhat at a loss to explain the atrophy in the left leg.

Dégerine (*La Médecine Moderne*, 12th June, 1890) has described two cases of Friedreich's disease, with marked atrophy in both arms and legs. But in these cases the atrophy was a progressive muscular atrophy of the Aran-Duchenne type, and quite different to that of the case we are now considering. Here the atrophy seems to affect equally all the muscles of the leg, and, as far as I can find out, it is not progressive.

Perhaps the best explanation one can give is to consider the atrophy as resulting from an old and slight infantile paralysis (anterior polio-myelitis), which has affected all the muscles of the left leg, and which, to a large extent, has been recovered from. The permanent atrophy of a number of fibres in each muscle would account for the loss in bulk, and the recovery of the remaining fibres for the practically unaltered electrical reactions. According to this view, then, the atrophy of the leg is an "accident" setting in prior to, or occurring in the course of, Friedreich's disease.

### III.—CASE OF PSEUDO-HYPERTROPHIC PARALYSIS.

BY DR. W. K. HUNTER.

A. M., æt. 12, was admitted to Ward 7 on 9th April, 1900, the complaint being that he was stiff and unable to go about like other boys, that he was easily tired, unsteady on



his feet, and that when he had fallen down he had great difficulty in rising up again.

The onset of this condition seems to have been very gradual, the parents saying that they never noticed it coming on—that it was always there. The child did not attempt to walk till he was 2 years old, and he never walked well, there always being something stiff about him. It was not, however, till he was 5 or 6 years of age that his parents specially directed their attention to his condition. But they can give no definite account of the progress of the symptoms beyond saying that recently he has lost flesh considerably, and that his general strength has become greatly impaired.

Measles is the only other ailment he has had.

*Family history.*—The patient is one of a family of nine, only three of whom are now living. Of those dead, three (aged 19 months, 5 months, and 4 years) died of meningitis, one of pneumonia, one when six weeks old, and one was stillborn. The other two living are girls (aged 14 years and 10 years), and they are both healthy and well developed. The father and mother and the four grandparents were healthy. The father's brothers and sisters all died in infancy, the oldest not being more than 4 years old. The mother was one of a family of twelve (six boys and six girls), all of whom were healthy, except three brothers who seem to have suffered from some form of myopathy. In their case the illness came on when they reached the age of 10, and two died when 14 and one at 16. Their ailment is said to have been precisely similar to that of our patient, but it is difficult to get such details of their symptoms as to make it quite certain that they also were cases of pseudo-hypertrophic paralysis.

*Present condition.*—The patient is bright and intelligent, and of average height for a boy of his age. When he stands up his attitude is characteristic, the feet are kept wide apart, the shoulders are thrown back, and the lumbar curve is very marked. He walks with a waddling gait, and his manner of rising from the ground is quite typical of this form of paralysis. He has great difficulty in going up stairs, and, indeed, he cannot do so without pulling himself up by means of the banister.

There is a great degree of muscular weakness, especially in the arms and legs. There is apparent hypertrophy in the muscles of the calf of each leg, and possibly also in the tibialis anticus muscles, but there is no structural shortening in any of these muscles. The circumference of the right calf is 10 inches, and of the left  $10\frac{1}{2}$  inches. There is enlargement

of the vastus muscles of both sides, and also of the glutei muscles. Possibly there is some atrophy in the adductors of the thigh. It is difficult to say if the lumbar muscles are affected or not, but they seem weak, and probably there is also some apparent enlargement. There is marked atrophy in the pectoral muscles, and, indeed, the lower portions of the pectoralis major muscles are almost entirely gone. There is atrophy in the latissimus dorsi, in part of the biceps, and, to a less degree, in the triceps. The deltoids and serratus magnus muscles seem unaffected, but the infraspinati and supraspinati show well-marked hypertrophy. The muscles of the face and neck are unaffected.

There is considerable lividity and coldness of both hands and feet, but there is no error of sensation. The patellar tendon reflexes are absent, and the plantar reflexes unduly active.

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#### MEETING XIV.—11TH MAY, 1900.

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DR. W. G. DUN *in the Chair.*

TWO EXAMPLES IN MEN OF SEVERE AND PROLONGED ATTACKS OF ASTHMA, ASSOCIATED WITH, AND APPARENTLY DEPENDENT UPON, THE PRESENCE OF NASAL POLYPI, EXTIRPATION OF WHICH RESULTED IN COMPLETE IMMUNITY FROM ASTHMATIC SYMPTOMS.

By DR. WALKER DOWNIE.

CASE I.—John B., aged 41, was brought to me by his medical adviser in December, 1895. The patient then complained of asthmatic attacks, which, during the previous eight months, had become increasingly severe and prolonged. The attacks at first came on at night shortly after lying down in bed, when the difficulty in breathing not only prevented him from sleeping, but compelled him to sit up, or even get out of bed. When he assumed the upright position, the spasm became less severe, only to return, however, when he lay down again. Later on, even sitting up gave no relief, and walking quickly would induce a spasm. Between July and December the attacks had been very severe, and during the four weeks previous to the first visit he had been unable to attend to business on account of the breathlessness and exhaustion—the asthma

being then practically continuous day and night. On examination, his sense of smell was absent in the left naris and deficient in the right, and while he could breathe through the right naris with slight effort, the left naris was completely blocked. The right naris contained numerous small mucous polypi, occupying the superior and middle meatuses. The left naris was wholly occupied by several large mucous polypi. These new growths were removed at intervals, as he felt able, by snare and forceps, with the result that he could breathe freely through both nares, and, along with this improvement, the asthmatic attacks became less severe. In June, 1896, he took a voyage to the Baltic. In September he called, and informed me that during the voyage, and since his return, he had had asthmatic attacks much as formerly. Mucous polypi were again found in each naris, and these were removed, and the surfaces from which they sprang were freely cauterised. Asthmatic attacks still returned, but at much longer intervals and with diminishing severity, till March, three months after the nares were thoroughly cleared. Since that date (March, 1897) till now, he has not had a single attack of asthma, nor, as he says, has he had the slightest approach to an attack. Formerly he rarely worked a full week: he was unable to go out in the mornings being so exhausted from the continuous respiratory difficulty and from want of sleep, but during the past three and a half years he has been regularly at work, not having been absent from it on a single occasion through ill-health.

CASE II.—Hugh S., aged 42, was first seen by me in March, 1898. For many years he had been subject to frequent attacks of sore throat, for the treatment of which caustic solutions were applied by his doctor. During those years he had frequently spoken of a stiffness in his nose, but this organ had never been examined. Early in 1895 he first suffered from asthma, and from this time on each attack of inflammation of the throat was followed by asthma. On many occasions these attacks continued night and day for weeks, and more than once, while exhausted from these long attacks, and while gasping for breath, he was supposed to be dying. From 1895 to 1898 he was frequently off work for six, eight, and ten weeks at a time, entirely on account of the severe and prolonged attacks of asthma. On examination, he was found to have difficulty in breathing through each naris, and his sense of smell was absent on both sides. There was a general hypertrophy of the nasal mucosa, with several large mucous polypi in both

nares. These were removed at several sittings, along with the anterior half of each middle turbinal bone, during March and April, and the surfaces from which the polypi sprang were freely seared by means of the electric cautery.

The extirpation of the growths was followed by immediate immunity from the attacks of asthma; but four months later (August, 1898) he contracted whooping-cough. This affection was apparently very severe, as during a paroxysm of coughing he on several occasions lost consciousness. While suffering from whooping-cough, he had frequent slight attacks of asthma during the early part of the night.

As he recovered from whooping-cough the asthmatic attacks disappeared, and he remained entirely free from asthma for fifteen months. Early this year he again began to wheeze on lying down at night, and he came again to the Western Infirmary, where a small mucous polypus was found in his left naris, springing from the posterior aspect of the middle turbinal, and projecting towards the naso-pharynx. This was removed with the cautery, and he has since had complete relief from all asthmatic symptoms.

*Remarks.*—I have now treated many cases of asthma dependent on the presence of nasal mucous polypi and of turbinal hypertrophies. The majority of those cases have been in women, in whom some neurotic tendency might be suspected of playing an important part in the production or aggravation of the symptoms. But here we have two healthy, vigorous men, to whom absence from work meant pecuniary loss, and who, over a series of years, had severe and prolonged attacks of asthma of the regular wheezing type, which is commonly associated with bronchial affections, and so severe as to necessitate confinement to bed and the use of many active remedies.

In both cases the nares contained many new growths, and in both cases the complete extirpation of the polypi not only gave relief, but has been followed by complete immunity from the distressing ailment.

I believe that, in the majority of cases of bronchial asthma complicated with the presence of nasal mucous polypi, if the asthma is not relieved by the removal of the new growths, it is because they have not been completely removed. In the first case, the early operations, which were incomplete, gave but slight relief; and, in the second, a tendency to asthma supervened on the reappearance of polypi.

About thirty years ago, Voltolini first drew attention to the dependence of some cases of bronchial asthma upon nasal

lesions, he having cured a case by the removal of polypi from the nose. His observations were supported by several writers in the medical press at the time, but the importance of the association between nasal disease and asthma was not generally recognised. Many physicians now refuse to believe that any case of asthma is excited by, or dependent upon, an intranasal lesion. In 1886, Bosworth, of New York, stated that in all the cases of asthma which he had seen, there existed an intranasal lesion. The opinion thus expressed by this eminent specialist, however, is not supported by specialists generally.

The majority of cases of asthma seen by a rhinologist have usually some very evident intranasal lesion, so that a specialist is not qualified to say in what proportion of cases of asthma the condition is the result of an intranasal abnormality. But, in my opinion, there are many cases of what is described as pure bronchial asthma in which the exciting cause lies unsuspected within the nares.



TRANSACTIONS  
OF THE  
GLASGOW MEDICO-CHIRURGICAL SOCIETY.

—o—  
SESSION 1900-1901.  
—o—

MEETING I.—5TH OCTOBER, 1900.  
—

*The Vice-President, DR. J. W. ALLAN, in the Chair.*

I.—TENDON-LENGTHENING IN A CASE OF VOLKMANN'S ISCHÆMIC  
PARALYSIS.

BY DR. G. H. EDINGTON.

This patient was shown to the Society in February of this year (1900) by Dr. Ritchie Thomson.<sup>1</sup> She had had a dislocation backwards of the fore-arm bones at the elbow in December, 1899, and the condition had been treated, first of all, with the limb in a position of extension, but this had gradually been altered to one of flexion at a right angle. A splint of poroplastic had been used, but had been left off at the end of three weeks. Early in the course of the treatment the fingers became flexed, and Dr. Thomson had been subsequently unable to straighten them. Swelling in the substance of the flexor muscles had been noted.

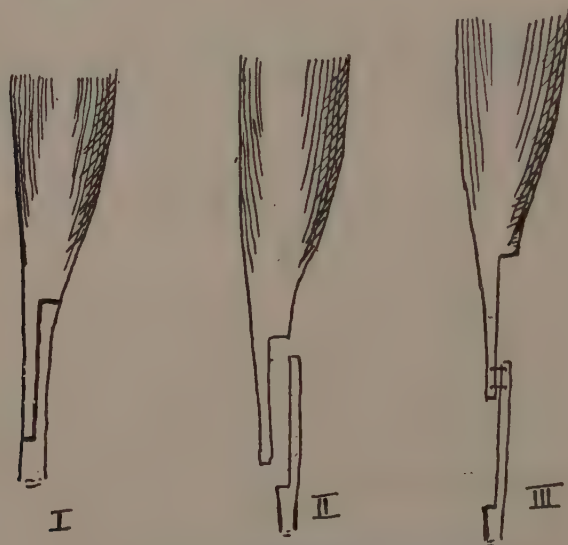
When shown to the Society at the meeting referred to, the

<sup>1</sup> See p. 111.

thumb and fingers were found to be firmly flexed in the palm, but could be extended to a certain degree by flexing the wrist. The hand was livid, and much colder than its fellow.

There was not, so far as anæsthesia was concerned, any apparent implication of nerve trunks.

Dr. Thomson considered the case one of ischæmic paralysis, and recommended tendon-lengthening. The case came under my care at the Dispensary of the Royal Hospital for Sick Children during Dr. Thomson's absence in South Africa, and the operation of tendon-lengthening was performed on 22nd February, 1900.



Anderson's method of tendon-lengthening (after Littlewood).

*Operation.*—A rectangular flap of about 2 inches in length, and with its base across the front of the wrist, was turned down from the fore-arm. The individual flexor tendons were identified, and were, by means of a fine tenotomy knife, "split longitudinally, and severed to right and left at the opposite ends of each incision"<sup>1</sup> (see figure). The cut ends of each tendon were loosely joined by sutures, to prevent any chance of subsequent confusion. The fingers were then extended, and the sutures tied. The longitudinal splits in the tendons were over an inch in length, and while in some cases

<sup>1</sup> Quotation from Mr. Page's paper, *vide infra*.

this allowed the cut ends to overlap with the fingers in the extended position, in others the whole of the gain in length was required, and the extremities of the tendons were sutured end to end.

The tendons so treated were those of the flexor sublimis, flexor profundus, and flexor longus pollicis. The median nerve was divided in mistake for this last, but the error was rectified by immediate suture. The sutures used were of fine catgut. The skin flap was then fixed in position by silk-worm-gut stitches, dressings were applied, and the limb was put up on an anterior splint of junk, with the thumb and fingers in the position of full extension.<sup>1</sup>

The operation was done bloodlessly, and the band was not removed till after the application of the dressing.

*Subsequent course.*—There was observed very marked lividity and coldness of the terminal portion of the middle finger. The upper end of the flap sloughed, and this part of the wound healed by granulation, when it was found that the transverse cicatrix was so firmly adherent to the subjacent flexors as to greatly impede their action: and while the fingers had now been placed in the extended position, the power of flexion was present in only a slight degree. To remedy this the adhesions were divided subcutaneously on the 23rd April, and the parents were directed to see that the limb was exercised. The result was that the power of flexion was restored, although not to its full extent (as compared with the condition in the uninjured limb), and the lividity of the middle finger disappeared.

About one month after the first operation electrical stimulation had been begun. At first the faradic current gave no reaction, and for a week galvanism was employed; but at the end of this time the interrupted current was begun, and the slight reaction then obtained had gone on increasing. The electrical treatment was left off till the puncture of the second operation had closed, when it was resumed, and was carried on till the beginning of August, when it was finally stopped.

*Present condition* (5th October, 1900).—The power of flexion is good in all the digits, but it is not complete so far as the flexor sublimis is concerned. Pronation is good, as are also the other movements of the wrist and elbow-joint. The circumferential measurement of the fleshy part of the fore-arm is less than that of the other limb (right, 13·5 cm.; left,

<sup>1</sup> The flexion of the fingers was so rigid that it was only possible to cleanse them after the division of the tendons had been completed.

14.25 cm.), but on her closing the fist the increase in circumference is equal in both limbs, viz., 0.5 cm.

The hand appears to have undergone no atrophy, and sensation in the parts is apparently normal.

My colleague, Dr. W. K. Hunter, has kindly made an *electrical examination*<sup>1</sup> of the muscles, which shows that the response in the right flexor profundus and sublimis to both currents is diminished, as compared with the extensors, and as compared with the flexors and extensors of the left arm. The response in the flexor carpi ulnaris is quite normal.

Mr. Herbert W. Page reports a case<sup>2</sup> which presents some points of similarity to the above. The following are the main features of his observation:—

A boy, aged 4½ years, was said to have sustained a transverse fracture of the lower end of the humerus in August, 1898. The limb was put up in the flexed position, with anterior and posterior splints on the fore-arm. A few days later there was total loss of power of the fingers and wrist. Immediately below the fold of the elbow was a superficial slough from pressure of the splint. At the end of four weeks the parents were instructed to manipulate and rub the arm on account of an increasing tendency to contraction of the finger and wrist. On one occasion, under an anæsthetic, a fruitless attempt to straighten the fingers and hand was made. When Mr. Page saw the case, three months after the accident, the arm was in a flexed position, midway between pronation and supination. The site and surroundings of the scar of the pressure-sore were exquisitely tender, and there was, in addition, tenderness of the whole anterior surface of the fore-arm. The fingers were flexed into the palm, and the wrist also was in a position of extreme flexion. The joints were clearly unaffected. Anæsthesia was noted in the ulnar distribution in the hand, and there was some suspicion of atrophy of the first dorsal interosseous muscle. The flexor muscles were very unyielding to pressure. There was no median, ulnar, or musculo-spinal paralysis, and the slight ulnar paresis he attributed to local injury to the nerve at the site of fracture, and possibly to the pressure of callus, which could be felt at the lower end of the humerus. He believed that there had been a separation of the lower epiphysis. Anæsthesia had no effect on the flexor contraction.

In December, 1898, tendon-lengthening was performed. A

<sup>1</sup> 4th October, 1900.

<sup>2</sup> *Lancet*, 13th January, 1900, p. 83.

rectangular flap was raised immediately above the wrist, and the tendons were split and cut through as I have already quoted. They were sutured only after extension had been made. The exposure of the muscles gave the impression of their being "stiff and unyielding, firmer than natural, and as if their structure had been changed." The hand and arm were secured in the flexed position, and the wound healed by first intention. After a fortnight, passive extension of arm and fingers was cautiously begun, and massage and electricity were also employed.

He left hospital in February, 1899, with little improvement in the power of the limb, and attended as an out-patient for electrical treatment. By the end of July there was distinct improvement, tenderness of the limb was much less, and extension of wrist and arm was accompanied by much less of the associated flexion of the fingers noted in February. At the beginning of October all tenderness had gone, and he could easily "make a fist." The flexor profundus alone acted on the index. The sense of abnormal resistance was no longer detected on palpating the muscles.

A week or two later there appeared in the *Lancet*<sup>1</sup> the report of a lecture "On Some Complications following on Injuries above the Elbow-joint," delivered in Leeds on 14th November, 1899, by Mr. H. Littlewood. His lecture was founded on two cases in which contraction of fingers and wrist followed fracture of lower end of humerus. The following is a *précis* of his cases:—

CASE I.—Girl, aged 8 years, sustained fracture of lower end of humerus, with much swelling of parts. Originally treated on internal rectangular splint for four weeks. At end of this time noted contraction of fingers, which gradually increased. When seen in November, 1898, four months after the accident, there was some limitation of movement at elbow-joint. Fingers could be completely extended when wrist was flexed, but when latter joint was extended the digits were firmly flexed on the palm. A thickened mass could be felt in the substance of the flexor muscle. There were no scars on the fore-arm.

In December, 1898, tendon-lengthening was performed. This patient had a very useful hand eleven months after the operation.

CASE II.—A girl, aged 6 years, sustained in May, 1898, a severe fracture above the left elbow-joint, and a fracture of

<sup>1</sup> 3rd February, 1900, p. 291.



the fore-arm bones. There was great swelling, the fragments were with difficulty kept in position, and a splint-sore formed about the middle of the back of the fore-arm.

When seen eight months later the condition resembled that in Case I, but the flexor contraction was more marked; both fractures had united, and the movements of the elbow-joint were good. The "lump" on the muscular part of the flexors was well marked.

In January, 1899, tendon-lengthening was performed on all the tendons save that of flexor carpi ulnaris.

The result was satisfactory, although at date was not so good as in Case I.

His method differs in some detail from that of Mr. Page, in so far that he joins superficial flexors by a loose suture immediately they are cut, to aid subsequent recognition before tying. He does not raise a flap, but operates through a median incision running up from the wrist for a distance of about 4 inches; and, finally, he puts up the parts in the extended position.

Mr. Page, in his article, refers to the *etiology* of this form of paralysis. He quotes Volkmann's opinion that the condition is probably due to a process of severe inflammatory muscle-contraction, and not to primary nerve-paralysis from pressure; and that this contraction comes on very rapidly (in a few weeks), contrasting with the more chronic progress of the paralytic form. This was Volkmann's view in 1875. He next gives a *précis* of Volkmann's conclusions in a paper written in 1881. The gist of these conclusions is that the muscle-fibre perishes from deprivation of arterial blood, its contractile substance coagulates, breaks up, and disappears; the simultaneous onset of paralysis and contraction is characteristic; the repairing material thrown out in the muscle contracts still further.

He also quotes Kraske's observations on muscles in two legs which had undergone gangrene from exposure to cold. Kraske found complete loss of nuclei in many of the primitive fasciculi with the absence of striation, and a granular appearance of the fibres, and he compares the condition to what is seen after circular constriction of a limb.

Mr. Page remarks that there can hardly be a doubt that this form of paralysis is due to a combination of pressure, fixation, and ischæmia, and that the end-plates of the nerves are probably damaged as well as the muscle elements. This view is based on the presence of the reaction of degeneration

which was obtained in his case by Dr. Harris. Mr. Littlewood attributes the condition in his cases to a laceration of the muscles when the fore-arm is displaced backwards with the lower end of the humerus. The torn muscle is then replaced by fibrous tissue, the contraction of which produces the deformity. This view, I think, is open to question, on anatomical grounds, the muscles in front of the joint, and which would therefore suffer, being the biceps and brachialis anticus.

Mr. William Anderson<sup>1</sup> describes a similar condition resulting from "interrupted evolution of the flexors of the fingers. . . . The causes are often obscure, but some examples have been traced to traumatic injuries (*sic*) of the flexor side of the fore-arm in infancy or childhood. . . . The essential factor appears to be a trophic lesion of local or central origin, which retards or arrests the due growth of a muscle, or a portion of a muscle, without causing its atrophy or paralysis."

The method of tendon-lengthening which I adopted, and which was also employed by both Page and Littlewood, is that introduced by Anderson. He relates the case of a girl, aged 17, on whom he had operated in September, 1889. A small scar was seen 2 inches below the elbow, over the inner side of the front of the arm, the result of a fall thirteen years before. The contraction appeared shortly afterwards, but had been getting more rapidly worse during the preceding eighteen months, when she had been growing very quickly. Six months after the operation, the contraction was found to be gradually reappearing, probably on account of the rapid growth of the girl in the interval. She was advised to wait till fully grown before undergoing a secondary operation. He thinks that "the contraction evidently depended upon a trophic lesion, perhaps due to the injury in childhood, involving the ulnar portion of the flexor profundus, impeding the growth of the muscle, and so preventing it from keeping pace with the normal growth of the bone, but not causing paralysis. 'The contraction of the flexor sublimis was evidently secondary.'" He figures his method of lengthening the tendons, which he believes is original. He raises a flap by "a semicircular incision over the inner side of the front of the fore-arm, just above the wrist, the convexity overlapping the tendon of the flexor carpi ulnaris, the horns reaching to a line midway between the radial and ulnar border of the limb."

*Conclusion.*—The partial slough of the margin of the flap,

<sup>1</sup> *The Deformities of the Fingers and Toes*, London, 1897, pp. 57 *et seq.*

which is much to be regretted, might be due to the presence of the splint which was applied to keep the fingers in the position of extension. It will be observed that Mr. Page, who used the flap method, put up the parts in the position of flexion, and obtained union by first intention: and it would perhaps be safer to use Littlewood's single incision if one is going to put up the limb in the extended position. My reason for making a flap was to place the skin wound at some distance from the seat of operation in the tendons, and at the same time to obtain a large field to work in.

The accidental section of the median nerve produced no ill effect, save, perhaps, the coldness and lividity of the middle finger mentioned above. This continued till the subcutaneous division of the adhesion between the skin-cicatrix and the tendons permitted freer movements in the limb.

## II.—CASE OF PSEUDO-HYPERTROPHIC PARALYSIS.

By DR. W. K. HUNTER.

J. H., æt. 8, was admitted to Ward 7 of the Glasgow Royal Infirmary on 4th September, 1900, his complaint being of weakness in his back, of great helplessness, and of being unable to rise from the ground without aid.

It is difficult to obtain any definite information as to the onset of the illness. The patient did not begin to walk till he was 3 years old, and he is said never to have walked well; but the walking has been getting much worse in the past twelve months. He cannot now go any considerable distance, and he is constantly tumbling and hurting himself. For the past six months he has not been able to rise from the ground without assistance. He is said to have become much thinner in the past year.

He had enteric fever when 7 months old, and measles and whooping-cough eighteen months ago.

The father and mother are alive and well. Our patient is the eighth of ten children. One died when 11 months old; the others (three boys and five girls) are all alive and well. There is no history of any similar disease in any of the grandparents, uncles, or cousins.

The patient is rather small for his age. He measures 3 ft. 6 in., and weighs 3 st. 1 lb. The palate is highly arched. The muscles of the jaws, face, and neck are unaffected. There is marked enlargement of the deltoids and infraspinati muscles, and atrophy of the pectoral and latissimus dorsi.

The biceps and triceps are also considerably wasted. The muscles of the hands are unaffected, but there is slight, though undoubted, increase in size of all the muscles of both fore-arms. The muscles of both legs are greatly hypertrophied, and this affects not only the flexors but also the extensors of



J. H., æt. 8.

the feet. The circumference at the middle of the calf is  $10\frac{1}{4}$  in. The quadriceps femoris is involved, but much more so in its outer aspect. The adductors are possibly slightly atrophied. The flexors of the knee are considerably hypertrophied. The circumference at the middle of the thigh measures 13 in. There is no permanent flexure at the knee

or ankle-joints. The glutei, lumbar, and also the abdominal muscles all show considerable enlargement. The gait is waddling, and the patient is very unsteady on his feet. He cannot go up or down stairs unless holding on to the banister. He cannot rise from the ground without aid, and it is even with difficulty that he turns himself round in bed.

The patellar reflexes have not been obtained. The condition of the internal organs seems quite normal.

*Dr. J. Wallace Anderson* said that he thought such cases ran a much less rapid course than text-books seemed to indicate. He has had a similar case under observation for seven years, and the lad is now 18 years of age.

### III.—ON A NEW FORM OF HANDLE FOR MOUNTED HALF-CIRCLE NEEDLES.

BY DR. ALEX. MACLENNAN.

The use of a finely curved needle seems to the novice one of the easiest of the mechanical acts of surgery; yet such is not the case, as he finds out on his first attempt. The needle either breaks in the process of insertion or when the point is grasped for its withdrawal—the point is “blunt,” or the “tissues remarkably tough”—often, however, it is really owing to the want of deftness on the part of the operator.

It should be remembered that, when using the needle-holder armed with the half-circle needle, the eye should be little raised from the skin while the point is entering it. This embodies a principle which applies equally to curved mounted needles of all kinds—viz., that the point must be pressed into the skin in the direction of the tangent to the circle, part of which is formed by the needle. The needle is not to be twisted in, nor must the rotatory action begin till the needle has pierced the skin; thus needle-holder and needle move directly downwards, the point being kept at a level slightly lower than that occupied by the head.

Once the needle enters the skin, its path is its own; still it is always better that the hand guide the needle, and not *vice versa*.

When the deeply embedded half-circle needle is being withdrawn, by grasping its point with the needle-holder, the needle will break unless the circular motion used in its insertion be also employed in its withdrawal.

One great merit claimed for the half-circle needle is its



suitability, not only for the insertion of superficial sutures, but of buried ones, such as are *par excellence* employed in repair of the female perineum.

The needle must trace out through the tissues the other half of a circle, so that the point of the needle leaves the skin at the spot where the eye of it originally was, thread and needle together forming a complete circle. In its insertion, transit, and exit the needle must rotate about an imaginary centre situated half between its point and eye.

The usual form of needle-holder is not adapted to produce this movement, nor can it be easily fitted to the various sizes of half-circle needles.

In the pattern shown the point of the needle is almost on the same plane as one of the bars of the handle, and the handle rotates about an imaginary axis, which, if continued, would pass through the centre of the circle described by the needle. The point is slightly raised above the plane of the rest of the needle, so that it may not come in contact with whatever the needle is resting on. Then, again, when using such a needle, one always knows where the point of it is. This is important. This rotation movement employed in passing a half-circle needle of the above pattern is the simple movement of supination from full pronation.

The reason for bringing such a detail before the profession is that often the needles made on the ordinary plan break at some critical moment, and imperil the success of important operations.

#### IV.—OCULAR HEADACHE.

BY DR. JAMES HINSHELWOOD.

THAT eye-strain is a cause of headache is a fact which is generally known, but I am quite certain that its importance as a frequent cause of this distressing symptom is not sufficiently appreciated.

Stevens<sup>1</sup> reports that in 100 consecutive cases of chronic headache in which the eyes were examined, he cured 61 by correcting the ocular defects. Gould<sup>2</sup> says that out of 1,500 cases in private practice he found 75 per cent of all headaches, and 95 per cent of sick headaches, were due to eye-strain. Whilst not attaching too great importance to statistics constructed on such a narrow basis, they at least serve to illustrate, in a graphic way, the great frequency of eye-strain

<sup>1</sup> *Functional Nerve Diseases*, 1887, p. 48.

<sup>2</sup> *Ophthalmic Review*, vol. x, p. 280.

as a cause of chronic headache. I am quite certain we are keeping well within the limits of safety, when we say that of the cases of chronic headache met with in ordinary practice, at least 50 per cent are due to eye-strain.

It is therefore a matter of considerable importance for the general practitioner to be able to detect the ocular origin of a headache, both for his patient's comfort and for his own reputation. Many of these cases are not recognised because the connection between the headache and the eyes is not always manifest, and is often entirely unsuspected by the patient. Hence, it will be of value to the practitioner to know what clinical experience teaches regarding the characteristics of these ocular headaches. Such knowledge may help to prevent him from falling into the serious error of submitting his patient in vain to a long course of medical treatment, instead of giving him the immediate and permanent relief which follows in such cases from the prescription of suitable glasses.

But here I would give a word of warning. Never send such patients direct to the optician. Send them either to the hospital or the surgeon's private consulting room, where the refraction can be accurately measured. How often have I seen patients coming into my consulting room with an extensive collection of spectacles, which they had gradually amassed in their visits to the various opticians, and all to no purpose. The accurate measurement of refractive errors, and the prescription of suitable glasses, is a task often demanding great knowledge and judgment, which can only be satisfactorily accomplished by the ophthalmic surgeon.

Headaches due to eye-strain vary much in position, in character, and intensity. Sometimes it is only a slight dull pain, or a feeling of weight and heaviness, but sometimes it amounts to pain of a very intense character. In some cases the pain in the head is so persistent and severe as to cause grave apprehension of some intracranial disease, but usually the ocular headache is described by patients as a dull, heavy ache. The position of the pain also varies greatly. Some describe it as superficial, others as deep-seated. It may be frontal, temporal, vertical, or occipital, and I have even seen cases of pain at the back of the neck due to eye-strain. The most common seat of ocular headache is undoubtedly the frontal region just above the orbits, but it is met with in all situations. Hemisrania due to eye-strain is not common, but I have met with several cases of it.

In many cases of ocular headache, the patients complain of

discomforts in or about the eye, such as a sense of heaviness or burning in the lids, a feeling of soreness in the globe of the eye, or a deep-seated pain at the back of the orbit. When such symptoms are present, the discomforts in or about the eye draw attention to the probable origin of the headache, and thus help greatly in the diagnosis. But it should not be forgotten that there are cases of headache of undoubted ocular origin where there are no discomforts whatever in the eye. These are the cases in which the true cause of the headache is frequently not discovered until after many years of suffering on the part of the patient. Hence, it is important to bear in mind the fact that the complete absence of subjective eye-symptoms does not at all exclude the possibility of an ocular origin of the headache.

But even in such cases there is one characteristic in the history of the headaches, which should arouse a suspicion in the physician's mind that the headaches may be due to eye-strain. I refer to the fact that, in ocular headaches, the pain is nearly always brought on, or, if persistent, is intensified by the use of the eyes. This is a point of great importance, and should always be enquired into very carefully. If a patient, suffering from chronic headache tell us that on the Sunday, when being away from business, he has little reading or writing to do, his headache is always much better, or perhaps entirely disappears, then suspect that it probably is of ocular origin. If a lady inform us that whenever she goes out shopping, looking in at the windows and examining different articles in the shops, she always returns home with a racking headache, then suspect that this headache also is of ocular origin. Whenever you find that the headache is brought on or intensified by the use of the eyes, or relieved or ameliorated by resting them, then always strongly suspect eye-strain is the probable cause.

But although headache due to errors of refraction depends directly upon the extent to which the eyes are used, in some cases the headache assumes a curious paroxysmal character. The patient may use his eyes continuously for near work, and yet suffer from one or two attacks only during the week. Such headaches may be extremely severe, sometimes accompanied by vomiting, and may even interrupt the patient's work. They resemble an attack of megrim, but they differ from true megrim in their bilateral distribution, and in the absence of any of the higher visual phenomena, such as fortification figures, or defects in the visual fields.

When our suspicions are aroused as to the ocular character

of the headaches, we should at once proceed to examine the patient's acuteness of vision with the test-types. Here I would remark the utter uselessness of asking the patient if there is anything wrong with the sight. I have had patients frequently assure me that they had excellent vision, and when they were examined with the test-types it was found that their vision was very defective. A large number of patients suffering from astigmatism, for example, are not aware that their acuteness of vision is below normal, because, their affection being congenital, they possess the same acuteness of vision which they always had, and have no standard of comparison to test it by, until they are brought to the test-types. It is difficult sometimes to convince such patients that their vision is not so good as they imagine it to be. I have met with many striking examples of this class.

A few years ago a friend of my own, on a holiday visit to me, remarked that it was curious that the headaches from which for many years he had suffered more or less at business always left him when on a holiday. He had never derived any relief from the numerous remedies which had been prescribed for him by the many physicians whom he had seen in the course of years. This history, voluntarily given, made me suspect that his headaches might be of ocular origin, but on suggesting this he scouted the idea. He never had any pains in his eyes, and he assured me his vision had always been good. However, on taking him to the test-types, I found that his acuteness of vision was considerably below normal, and on examining him by retinoscopy, astigmatism was found in each eye with the meridians oblique. Cylindrical glasses were prescribed for constant wear, and he had no further trouble with the headaches from which he had suffered constantly for so many years.

A point of great importance is that headaches of ocular origin are frequently due to very slight errors of refraction, which are only discovered on very careful examination of the patient. High errors of refraction are but rarely associated with headaches, which are found chiefly associated with medium and especially with very slight refractive errors. Hence, I always urge that all suspected cases, even with a normal acuteness of vision as tested by the distance types, should be examined under homatropine with the shadow test, or by some of the objective methods. With such objective methods as the shadow test and the ophthalmometer, it is now possible to estimate refractive errors with the greatest precision and nicety.



It is sometimes astonishing to find the distressing headache and the great discomfort which may be due to such a slight refractive error as half a dioptre of astigmatism. I think the probable explanation is that, with a very high degree of refractive error, the patient's vision is so defective that he abandons all effort to improve it, and hence no strain is thrown upon the ciliary muscle. But with the slight errors, sufficient to produce slight indistinctness and blurring, such, for example, as is produced by a small amount of astigmatism, the patient is constantly endeavouring by irregular contraction of his ciliary muscle to counteract the astigmatism and get clear images. The constant strain on his accommodation thus produces the distressing symptoms from which he suffers.

At the beginning of this year I saw a lady, æt. 33, who for years had suffered from severe frontal headaches, which had been much worse since an attack of influenza a year ago. These frontal headaches were always intensified by the use of the eyes. For some months before I saw her she had given up reading, as she found that the attempt to read for any length of time always brought on a severe attack of headache. She complained especially of the severe headache which always followed her shopping excursions, and said she was always afraid to look into a shop window for fear of bringing on her distressing headaches. On examination under homatropine I found that she had half a dioptre of hypermetropic astigmatism in the right eye, and the same amount of myopic astigmatism in the left. These cylinders were prescribed for constant wear, and since then she has been entirely free from headaches, and able to use her eyes without discomfort. This is only one of the numerous examples which I could quote from my case-books where a very slight amount of astigmatism frequently produces the most distressing symptoms, of which headache is one of the most common.

Whilst we know that headache is a very frequent accompaniment of errors of refraction, we must remember that it is a symptom only of a minority of such cases, although a very considerable minority. Bickerton,<sup>1</sup> of Liverpool, says that out of 1,000 cases of errors of refraction he found 277 suffering from headaches. This gives a percentage of 27·7. Ernest Clarke<sup>2</sup> finds that, of his patients who suffered from some error of refraction, about 30 per cent complained of headache. From my own private case-books I find that, taking my last 500 cases of errors of refraction, 123 of these suffered from

<sup>1</sup> *Lancet*, 1887, vol. ii, p. 303.

<sup>2</sup> Ernest Clarke, *Eye-Strain*, London, 1892.



headaches—that is, about 25 per cent. We may therefore take it as a fairly correct statement that, of patients suffering from refractive errors, from 25 to 30 per cent suffer also from headache.

Of all the forms of refractive error, the one which is most frequently the cause of headache is astigmatism. Of the 123 cases of refractive error in my practice associated with headache, 90 were cases of astigmatism, 28 were cases of hypermetropia, and 5 cases of myopia.

This illustrates fairly well the relative importance of the various forms of refractive error in the production of headache, and it will be thus seen that astigmatism is by far the most common cause.

Of the different forms of astigmatism, the hypermetropic form is the one most frequently associated with headache. Of my 90 cases of astigmatism with headache, 40 were cases of hypermetropic, 31 were cases of myopic, and 19 were cases of mixed astigmatism.

I have already called attention to the fact that the presence of a very small amount of astigmatism, 0.5 to 1 D, is very frequently the source of all the patient's discomforts. Hence it is a matter of the very greatest importance to estimate this error with the greatest possible precision.

I would here call attention to the great utility of the ingenious instrument invented by Dr. Thos. Reid—the portable ophthalmometer, for the detection and measurement of corneal astigmatism. In the *Ophthalmic Review* of 1897 I have summarised in a short paper the special advantages of this beautiful instrument, which I have used for many years both in hospital work and in private practice. With this little instrument such a high degree of precision is attainable that a corneal astigmatism of 0.25 to 0.5 D can be readily estimated in a few seconds. It is a great help in a suspected case to be able to detect by this rapid and precise method the presence or absence of corneal astigmatism. When I detect the presence of corneal astigmatism with the ophthalmometer, then I proceed to examine the patient under homatropine, and estimate by the shadow test the total amount of astigmatism, which does not always coincide with the corneal measurement, there being also the lenticular astigmatism, which may increase or diminish the corneal. Where the patient objects to the use of homatropine, because of the prolonged interference with near vision, the shadow test can be employed by dilating the pupil with a few drops of a 5 per cent solution of euphthalmin, which interferes only very slightly, and for a very short time,

with the patient's near vision. An account of this new mydriatic will be found in papers of mine in the *British Medical Journal*, 23rd September, 1899, and the *Ophthalmic Review*, November, 1899.

These errors of refraction cause an excessive strain to be thrown on to the ciliary muscle, which evidences itself by the consequent discomfort in the eye, or headache, or both. But another cause of headache is found in weakness or insufficiency of the external muscles of the eye—muscular asthenopia, as it is called. The form most frequently met with is insufficiency of the internal recti. In order to read or do near work, the eyes require to be kept in a state of convergence by contraction of the internal recti muscles. If these muscles are healthy this convergence can be maintained continuously for a long time without discomfort to the patient, but should there be any weakness of those muscles, the prolonged strain produces great discomfort in the shape of headache, or pains in the eyes, or both.

Muscular asthenopia is a very much less frequent cause of headache than ciliary asthenopia; still, it should always be borne in mind, especially when the correction of any refractive error does not give relief to the patient.

Another cause of ocular headache which must be mentioned is glaucoma. Here the pain is primarily situated over the temporal and maxillary regions, but may spread forwards up to the middle line, or backwards and upwards to include the vertex. The pain is sometimes very severe, and is frequently accompanied by vomiting and considerable prostration. In acute glaucoma the pain in the eye itself is so acute that attention is at once directed to the eye as the cause of the headache, but in chronic glaucoma the headache may be such a prominent feature, and the discomfort in the eye so slight, that its dependence upon disease of the eye may remain unrecognised. This error of diagnosis will lead to disastrous results, as such glaucomatous attacks, without suitable treatment, soon lead to irretrievable loss of vision.

The treatment of the cases of headache dependent upon refractive error, and consequent over-strain of the ciliary muscle, consists in relieving this strain by prescribing suitable glasses for the patient.

This of itself is sufficient in the large majority of such cases to give the patient complete relief. There are cases, however, in which medical treatment is necessary, in addition to the relief of the eye-strain, in order to bring about the desired result. In such cases the eye-strain is a factor in the

production of the headache, but not the sole factor. I have seen, for example, many cases of persistent headache in young anæmic women, which, though greatly relieved by the correction of the refractive error, did not disappear until the patient had been subjected to a thorough course of iron. I have seen also many cases of patients with refractive error after recovery from some acute disease suffering greatly from headache. The correction of the refractive error did not give relief until the general health of the patient was improved. Cases also occur of periodic headache, in which refraction is an important factor, and complete relief will not be given to the patient until this is corrected. For example, it is a common thing to find women with refractive error suffering from headache during, or at the end of, the menstrual period, which disappears when the eye-strain is relieved by the proper glasses. In these cases, although the element of eye-strain is always present, it takes an additional factor to produce the headache, *i.e.*, lowering of the general health of the individual. I have seen many cases of young girls suffering from headache about the period of the establishment of the menstrual flow which were due to eye-strain, as the headache completely disappeared on correction of the error of refraction. Sometimes the refractive error was very slight, and yet the correction of it gave complete relief to the patient. After wearing the glasses for a year or two, when the menstrual flow had been regularly established, and their general health was good, many of these patients were able to discard the glasses prescribed, without suffering from any of the distressing symptoms of eye-strain which had previously afflicted them.

This is a clinical fact of considerable importance, which, I think, is not sufficiently appreciated, *viz.*, that the headache is frequently the result of several contributing factors, of which the refractive error is only one. The successful treatment of such cases, therefore, consists not only in the correct estimation of the refractive error and the prescription of suitable glasses, but in the discovery and removal of the other contributing causes.

A very common and very important factor is, as has already been pointed out, some lowering of the general health of the individual. The ciliary muscle, like all the muscles of the body, is influenced by the general condition of the individual. A man in robust health may be able to walk 20 miles, and without any undue fatigue, but the same individual, after an attack of some debilitating illness, may have great difficulty in covering a single mile. So is it with the little muscle of

accommodation. A patient with some slight refractive error may have had no discomforts of any kind for many years of his life, because his ciliary muscle was quite able to do the extra work necessitated by the refractive error. He has some illness of a weakening character, or the tone of his general health is lowered, and the ciliary muscle is no longer able to bear the strain which it previously did. Consequently, he begins to suffer more from the symptoms of eye-strain, of which headache is one of the most common. In the treatment of such cases, therefore, attention must be paid to the improvement of the general health of the patient, as well as the prescription of suitable glasses.

Another very important factor in the production of eye-strain is over-work and over-exertion of the ciliary muscle. A patient has got on quite comfortably for a long time, when some alteration in his mode of life takes place which necessitates an increased amount of near work for his eyes. The increased strain is more than the ciliary muscle can bear without manifesting symptoms of distress in the form of pain in the eyes and headache. In such cases it is to be remembered that the treatment does not end simply with the prescription of suitable glasses. Even with normal refraction the eye will stand only a certain amount of work. When this is overdone, symptoms of discomfort will arise. Such patients must be informed that the eye must not be subjected to too great a continuous strain. I have found it an admirable plan to recommend to the patients who have a large amount of near work to do the advisability of giving the eye occasionally short intervals of rest from near work by stopping their reading or writing or sewing for a few minutes every hour. These short intervals of rest are often of great assistance. It must be impressed upon such patients that glasses are only a help, but that if they wish to get entirely rid of their distressing symptoms, they must arrange their mode of life so that their eyes are not called upon to make the excessive continuous effort demanded by too long periods of near work.

When the headache is due to weakness or insufficiency of the external muscles of the eye, of which the most common form is insufficiency of the internal recti, relief is sometimes given by correcting any error of refraction, and thus enabling the patient to hold his work farther back. Sometimes patients have got into the bad habit of bringing their work quite unnecessarily close to their eyes, thus throwing great strain upon their internal recti. They must be taught the necessity of holding their work as far away from the eyes as they can



with comfort. In such cases, too, much good may be done by regulated exercises and by improving the general health of the patient, by enjoining out-door exercise, and by the administration of tonics. In many cases, however, relief can only be given to the patient by prescribing prisms of suitable strength with their bases in, in the case of convergence insufficiency, or in such a position as diminishes the work of the weakened muscle.

It is thus evident, from a study of the foregoing facts, what an important part the eye plays in the production of headaches. It is further evident that, whilst in many cases the relationship between the headaches and the eye is manifest, in others the eye-symptoms are so slight and trifling that the patient may suffer from headaches for many years without their ocular origin being suspected either by himself or his medical advisers. I would therefore insist that in every case of obstinate headache which does not yield to medical treatment, the eye ought to be examined as a matter of routine, even in the complete absence of subjective ocular symptoms. If this line of action be followed, it will frequently meet with its reward in the discovery of the true cause of the headache, and the ability, by suitable treatment, to give complete and permanent relief to the patient.

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## MEETING II.—19TH OCTOBER, 1900.

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*The President, MR. H. E. CLARK, in the Chair.*

I.—PATIENT OPERATED ON SIX MONTHS PREVIOUSLY FOR ABSCESS OF THE TEMPORO-SPHENOIDAL LOBE, ORIGINATING IN MIDDLE EAR DISEASE.

BY DR. H. RUTHERFURD.

Thomas M'L., æt. 19, admitted to Ward 25 of the Glasgow Royal Infirmary on 3rd April, 1900, as an urgent case, on the recommendation of Dr. Neil Campbell. The symptoms were of three weeks' standing, and consisted in pain in the left side of the head, with, during the latter part of that time, a varying degree of stupor, amounting on one day shortly before admission to complete insensibility. These were associated with discharge from the left ear of old standing. The day after



admission he was seen by Mr. Clark, when his condition had greatly improved, and it was decided to keep him under observation in order to get a clue to the area of pressure.

Having come on duty on 8th April, my attention was drawn to the case with the statement that since the previous day he had been much worse, moaning constantly, complaining of pain in the left side of the head, and lying on that side with his face down. I found him in a condition of very pronounced stupefaction, answering questions confusedly, and with no exact sense of how long he had been ill or of where he was. There was some facial paralysis on the right side, by no means complete, and more marked in the lower than the upper part of the face. The pupils were mobile, but the left did not contract so fully as the right. No distinct paralysis of the tongue could be made out, but there seemed to be slight weakness of the muscles protruding it on the left side, it being protruded rather to the left. No difference could be made out in the hand grasp, and on both sides it was feeble. Patient seems to have undergone considerable emaciation. The pulse is slow, under 60; respirations, 16; and temperature, which on admission was  $100^{\circ}$ , has come down gradually till it was  $97.2^{\circ}$  this morning.

*9th April.*—Pulse and respirations continue at the same rate. The temperature is still  $97.2^{\circ}$  at 4 A.M., and  $97.8^{\circ}$  at 8 A.M. He is more stupid than he was, and the dilatation of the left pupil is more pronounced. There is also ptosis of the left upper eyelid. Yesterday and to-day it is noted that he lies persistently on the left side, burying the left side of the face in the pillow.

Percussion of the skull elicits no sign of tenderness over any part of his skull, nor is any difference in percussion note recognisable by Dr. Rutherford.

There is noted a discharge from the left ear, and a scar behind the pinna, the result of an incision made two years ago in another institution.

It was decided to explore the left temporo-sphenoidal lobe for pus, and, after consultation with Mr. Clark, this was done, a disc being removed immediately above the zygoma, and with its centre slightly in front of the external auditory meatus. The dura was found bulging and fixed, as was the thin layer of cortex below it. This was not more than an eighth to a quarter of an inch in thickness, and, being punctured with sinus forceps, there escaped about 1 oz. of stinking, sloughy, and sanious pus.

A small amount of chloroform was given, and during its

administration the dilatation of the left pupil became more marked; before leaving the table, the left pupil had contracted nearly to the size of the right, while the pulse had risen to 70.

The cavity was packed with iodoform gauze, and a small rubber tube left in with it.

*12th April.*—Yesterday patient seemed so well that the special nurses were withdrawn. Last night he complained of pain in the side of the head, and was very restless; this, so far as could be found from the nurses, was the only pain complained of since the operation. This morning he is drowsy and stupid, with some confusion and difficulty in finding words; could not tell the name of the street he lived in, and used some meaningless words. Temperature went up to 100·3°, and there it remains. On removing the dressings and tubes, some thin offensive pus escaped, and it is noted that there is discharge from the ear.

*13th April.*—Dr. Rowan kindly examined the eyes, and reported as follows:—" . . . Eye movements normal. . . . Pupils react to light and accommodation, better to the latter. The right pupil responds better to light than the left, and also better to accommodation. Double optic neuritis, better marked in the left."

*16th April.*—This morning patient was put under chloroform, and Dr. Rutherford operated on the mastoid and middle ear, using gouges and the dental burr. The roof of the external meatus and the tegmen were removed, and the dura and cortex divided, so as to make the cavities into one.

There is still some right facial paralysis present, but it is less marked and only noted when the patient smiles. The pupils are now equal, and react readily to light. The tongue is protruded straight, and questions are answered intelligently.

*18th April.*—The slight pain complained of after the operation has entirely disappeared, and patient feels much improved.

*19th April.*—To-day, for the first time, patient was able to pass urine without use of the catheter.

*27th April.*—Dressings changed; wound looking well; united all round in front, but behind there is some hernia cerebri about size of a filbert. Patient is rapidly improving in his general condition.

*12th May.*—Dressed. At last dressing Dr. Rutherford fitted in a piece of pasteboard to make pressure on the hernia cerebri, and this has had good effect in reducing its bulk. A small piece of perforated zinc was used to-day. The wound is clean, and the patient is now going about the ward.

*29th May.*—Hernia cerebri has quite disappeared. Trephine flap quite healed, and pulsation is now confined to the region of the trephine opening on the skull. There is still slight discharge from the lower end of mastoid wound and from the meatus, but dressings are only changed once in eight or nine days.

Dynamometer shows, with left hand, 42 k.; right hand, 28 k.

*29th June.*—As a fistulous opening persists behind auricle, and there is purulent discharge from the auricle, Dr. Rutherford to-day opened up the wound and made the opening in the bone wider; removed more of the ridge representing the inner end of the posterior wall of the meatus; finally, split the posterior wall of external meatus (cartilage and skin), and stuffed the cavity from the meatus, leaving also some packing in the posterior wound.

Patient left the hospital on 21st August, with the posterior wound almost closed, a raw surface being still visible from the meatus. An attempt had been made to get this completely healed by the application of small grafts.

*19th October.*—At this date the patient has been back at his usual work for the last six weeks. There is no trace of any paresis of the third or facial nerve. He has good use of his hand, and can write as well as ever, but the dynamometer shows a slight comparative weakness persisting (right, 30 k.; left, 34 k.)

The wound on the mastoid is healed, but there is still a small granulating surface visible from the meatus.

The case seems to me of value in several particulars—

1. As illustrating the insidious development of cerebral abscess.

2. As a typical example of temporo-sphenoidal abscess with its general and local signs (there being stupor, with loss of voluntary micturition persisting for a week after operation), and double optic neuritis more marked on the affected side; almost complete paralysis of the right arm (cortical), complete paralysis of the third nerve, paresis of the right facial—that of the third being from interference with the left in its course, while that of the facial must be supposed to have been cortical, as indeed was indicated by its incomplete distribution. The apparent paresis of the left side of the tongue remains unexplained.

3. The management of hernia cerebri.

4. The dangers of persistent otitis media.

## II.—CASE OF INTERNAL SUBASTRAGALAR DISLOCATION OF THE FOOT, REDUCED BY OPEN OPERATION.

BY DR. H. RUTHERFURD.

William R., aged 13, was admitted to Ward 25 of Glasgow Royal Infirmary on 3rd April, 1900, with an injury to the left foot, caused by its having been caught by the wheel of a bogey and crushed against the rail.

On admission, the whole foot was much swollen, and the soft parts tense. It was kept in fomentations with a view to reducing the swelling and facilitating recognition of the exact nature of the injury. The foot was somewhat inverted, and showed two marked bulgings—one in front of the external malleolus and the other on its inner border, apparently due to a displacement of the scaphoid.

A skiagraph taken with the foot lying on its inner surface showed the head of the astragalus to be engaged under the scaphoid.

It having been found impossible to reduce the deformity by manipulation, patient was put under chloroform on 13th April, and the attempt repeated without avail, before cutting down on the displacement. An incision was then made on the inside of the foot over the situation of the neck and head of the astragalus. The knife entered a cavity, the anterior wall of which was formed by the completely displaced scaphoid; and the relations of parts being now quite plain, I endeavoured with an elevator to prize back the scaphoid and bring up the astragalus head. This I was unable readily to do, the bones being very tightly held together by the stretched ligaments, and there having been some stripping of cartilage from the head of the astragalus.

I therefore cut down on the outside of the foot over the prominent head of the astragalus, and succeeded in levering it back from this side.

Both wounds were stitched, and the foot put up in a stiff dressing.

Thirteen days later the dressings were changed, and the foot put up in plaster of Paris, with instructions to the patient that this was to be worn for a month. As a matter of fact, he took it off in about a week, and thereafter found that he had good use of the foot.

He was seen on 1st June walking firmly and freely, and has now (six months after the injury) a foot with good arch and good spring.



*Note.*—A good representation of the external appearances in this condition is given in Walsham's *Surgery* (fifth edition, p. 419) from a cast in St. Bartholomew's Hospital Museum, and another in Treves' *System of Surgery* in the article on "Dislocations" by Mr. Sheild.

*Dr. Kennedy* said he had a similar case some time ago. He cut down and found the astragalus almost completely rotated. He divided the internal lateral ligament, and replaced the bone. The result was very good. A few weeks ago he had another case, but of old standing. There was a marked prominence on outside of foot, the astragalus presenting below outer malleolus. He removed a wedge from head of astragalus, and forced the bone back. The result is fairly good.

*Dr. Newman* said he had a similar case, but there was also fracture of the fibula. He reduced the deformity without an operation.

*Dr. Rutherford* replied, insisting upon the differences between dislocations of the astragalus and subastragalar dislocations.

### III.—KIDNEY SUCCESSFULLY REMOVED FOR COMPLETE TRANSVERSE RUPTURE.

BY DR. H. RUTHERFURD.

*History.*—James K., aged 16, was admitted to Ward 25, Glasgow Royal Infirmary, on 18th September, 1900, with a note from Dr. J. A. Green stating that he was the subject of a rupture of the kidney. About noon on the previous day, while riding a bicycle, he was thrown from it either by collision with a tramway car or by a slip in trying to avoid it, and, falling against the car, received such a bruise of the right side that he had to be taken home in a cab. From the time he got home till seven o'clock on the next morning (day of admission) the urine passed contained more or less blood. No blood was seen in the urine after his admission to hospital. Pain was complained of all over the abdomen, with boarding of the muscles and general tenderness, though it is noted that the pain in the abdomen was not localised. Patient lay on his back with his legs drawn up and his trunk bent over to the right side, as if to relax tension on the right lumbar region. Dulness to superficial percussion extended forward nearly to the anterior axillary line, interfering with the region of the colon. There was no bulging in the loin.



The pain was more or less constant, and so severe that patient cried from time to time during the day of admission, and had one-eighth of a grain of morphia in the afternoon. Fomentations had been used at home, and were continued after admission, and seemed to give some relief when they were freely applied.

There was no appearance of shock. The pulse, on admission, was about 108, respirations 40, and temperature that afternoon 101.2°.

From early morning till 8 P.M. he had only passed 7 oz. of urine, and this was quite free of blood.

On the 20th it was noted that the condition was much as before, except that while the pain was less severe and the tenderness more localised to the right side of the abdomen, it was possible to feel a more definite resistance in that region.

Temperature on the 19th was 101.6°. To-day the pulse is rather more frequent (114) than on admission, respirations have fallen somewhat (to 30-35), and the tongue is decidedly dry.

No purgative has been given, in view of the risks to any compromised portion of the bowel. Three separate enemata have not produced any satisfactory stool.

This morning, after consultation with Dr. James Adams and Dr. Paterson, it was decided to operate, and, the patient having been put under chloroform, an incision was made parallel to the last rib and about a finger's breadth below it. On dividing the lumbar aponeurosis, black blood in more or less clotted condition escaped, and was removed with fingers and swabs to the amount of what seemed about a pint. The kidney itself was found torn, or fractured across, and separated from the ureter and blood-vessels. On removal of the two portions, the fractured surfaces were covered with a layer of firm clot. The surface of the kidney showed patches such as are usually associated with embolism, alternating with areas darkened by extravasated blood. Only one vessel was tied, a vein connected with the upper fragment. Little or no arterial bleeding was seen.

The wound was stitched in part, and packed with iodoform gauze, and gave no further trouble till a month later (20th October) when, on taking off the dressings, Dr. Rutherford was surprised to find some pouting granulations in the middle of the scar, and, on exploring the sinus, found a piece of gauze packing which had become buried. Its withdrawal was followed by suppuration, which necessitated the use of a drainage-tube for a few days. The patient is now (4th

November) in excellent health, and has been going about the ward for some days.

On the day of admission patient passed 7 oz. of urine in the first twelve hours; during next day, 29 oz.; on the 20th (day of operation), 7 oz.; on the 21st, 21 oz.; on the 22nd, 20 oz. were collected, but some was lost owing to his having his bowels moved by medicine. Next day, the 23rd, 46 oz. was recorded, and thereafter it seemed that good compensatory action had been established.

The chief points of interest in this case are the mode of injury and the possible fallacy due to the disappearance of blood from the urine, and the otherwise mild character of the symptoms.

As regards the first of these, the boy was of opinion that he was thrown with his right side against the car. While he may be quite right as regards this, it is to be noted that there was no superficial mark of injury, and it is suggested that we have here an example of rupture by indirect violence, in fact, by sharp flexion of the trunk crushing the kidney.

The disappearance of an immediately produced hæmaturia suggests three possibilities:—

1. That the injury has been only slight.
2. That the ureter is blocked by clot.
3. That the ureter, with or without the vessels, is completely

torn across.

In this case, the first of these was disposed of by the diminished amount of urine passed, the presence of a considerable tumour, and the febrile condition. As between the second and third, it seems to me that no opinion could be formed without the knowledge gained by operation, and that on this ground alone operation was called for, besides the reason which exists in the possibility of later infection and suppuration in and about the extravasated blood.

Such a case, with its circumscribed extravasation of blood, differs in important respects from those in which the blood escapes into the peritoneal cavity, and also from those in which, with or without primary invasion of the peritoneal cavity, the colon or the duodenum is involved. That this latter complication ever happens in indirect violence I think is not likely.

*Dr. Newman* said he had seen a large number of cases of rupture of the kidney. He sutured a ruptured kidney with very good result seven years ago. The kidney in that case

had been ruptured by a fall, but the rupture did not extend into the pelvis of the kidney. He had another case five years ago where there was hæmaturia, and the bladder was blocked by clots. The clots were broken up, and got discharged. The hæmaturia disappeared, and the man recovered. Six months after, the same patient was operated upon for movable kidney. At the operation a large cicatrix was found in the kidney. Some time after the bladder was examined, and urine was seen to be coming from the ureter which was connected with the kidney which had been injured. Dr. Rutherford's patient might have recovered without operation, but as injured kidneys were very liable to become septic, he thought it better that such cases should be operated upon, and the kidney removed.

#### IV.—CASE OF ANÆMIA IN A YOUNG GIRL, ASSOCIATED WITH ENLARGEMENT OF THE SPLEEN.

BY DR. R. BARCLAY NESS.

J. T., a young girl, aged 16 years, was admitted into the Western Infirmary, under the care of Sir William T. Gairdner, on 1st February, 1900, affected with well-marked anæmia, and complaining of general weakness, associated with headaches, and occasionally with pain in the back and sides, chiefly the left.

When she left the hospital on 26th May there was little real change, beyond a slight improvement in her general condition, associated with an increase in weight. Since the middle of September she has been under my charge as an out-door patient at the Dispensary of the Western Infirmary.

It will serve my purpose best if, at the outset, I show you the patient, and demonstrate the chief clinical facts. Thereafter I will give you what details I have regarding the history, progress of the case, the examination of the blood, &c., and will discuss the probable nature of the condition.

In the first place, it will be noticed that the girl is fairly well nourished, though she is by no means well developed for her age. Her weight is at present only about 5 stones, showing, however, a gain of 10 lb. from the time she was first admitted to the hospital.

The most apparent feature of her condition is the degree of anæmia. This is very evident in the mucous membrane of the mouth, while in the skin it is associated with a peculiar yellowish appearance, difficult to describe, but likened by

some to a faded box-leaf, and technically called by others *lienosis* or *splenic cachexia*, on account of the association of this cachectic tint of the skin with enlargement of the spleen.

This tendency to a yellowish colouration is still more evident in the eyes, where the sclerotic is so yellow as to suggest jaundice; but there never has been detected in the urine any trace of bile, nor have there been other symptoms to suggest this condition.

Associated with the *anæmia* we have the "venous hum" well marked on both sides of the neck, and a distinct ventricular systolic murmur heard widely over the precordial area but more distinct over the pulmonic cartilage. There is nothing abnormal in the area of cardiac dulness. The pulse-rate on an average is about 95 per minute, respiration about 30 per minute. The lungs are normal.

The next important fact is the condition of the spleen. This is found very much enlarged, extending downwards from the left hypochondrium to within half an inch of the umbilicus. The tumour thus formed is smooth and firm, and the notch is readily made out. The patient often complains of pain in this region, but there is no tenderness. With regard to the liver, it is more difficult to speak with the same degree of certainty. By percussion there is no dulness that can be detected below the level of the costal arch, but on deep palpation, better felt when she was in the hospital than now, something solid can be detected immediately under the right hypochondrium—possibly it is of hepatic origin.

Nothing further has been detected of an abnormal character in the abdomen.

Passing now to the lymphatic system, it is to be observed that we have no enlargement of the glands of any consequence. While in the hospital it was noted that the cervical glands were slightly palpable as hard movable masses, but the individual glands were not distinctly enlarged. The inguinal groups were just detectable, but not those in the axillæ. There has been no further involvement since that time.

With regard to the examination of the blood, the following facts were made out:—On admission to the hospital in February the hæmoglobin was found to be 40 per cent, the red blood corpuscles 2,300,000 in the cubic millimetre. About the same time Professor Muir gave the following report on blood films, taken on 7th February:—

"The red corpuscles show considerable variation in size and shape, and there are some irregular forms (*poikilocytes*) present. There are also a few nucleated red corpuscles.

Leucocytes . . . = 10,000 per cubic millimetre.

Polymorphonuclear leucocytes, = 77 per cent.

Lymphocytes, . . . = 18 „

Large mononuclear, . . . = 3 „

Eosinophiles, . . . = 2 „

This condition indicates a slight relative leucocytosis. There are also present a few *myelocytes*.

“The presence of nucleated red corpuscles and myelocytes with this degree of anæmia is somewhat uncommon, and points, I think, to a graver condition than is indicated by the number of the red corpuscles. But the course of the case will show whether this is so.”

At a later date (16th May) Professor Muir again reported on the condition of the blood.

Red corpuscles, . . . = 2,590,000 per cubic millimetre.

“They vary considerably in size, but few irregular forms are present. A few *nucleated red corpuscles* are also present.

Hæmoglobin, . . . = 38 per cent.

Leucocytes, . . . = 6,600 per cubic millimetre.

Polymorphonuclear forms, . . . = 60 per cent.

Lymphocytes, . . . = 36 „

Hyaline (large mononuclear), . . . = 4 „

Eosinophiles, . . . very few.

Myelocytes (marrow cells), . . . one or two.

Blood plates, . . . scanty.

The condition is closely similar to that of 7th February, the date of first report.”

On 20th September I examined the blood myself, with the following result:—

Hæmoglobin, . . . = 55 per cent.

Red blood corpuscles, . . . = 3,400,000 per cubic millimetre.

Leucocytes, . . . = 15,233 „ „

This showed an improvement in respect both to the proportion of the hæmoglobin and the red blood corpuscles; but the leucocytosis was much more marked, chiefly in respect to the polymorphonuclear and lymphocyte forms, while the eosinophile cells were also slightly increased. An occasional nucleated red corpuscle was seen, but no myelocytes. I submitted my preparations to Professor Muir, and he detected



a distinct difference in the diminution or absence of these cells which had previously suggested a grave condition.

I again examined the blood on 16th October, with the following result:—

Hæmoglobin, . . .	=	45 per cent.
Red blood corpuscles, . . .	=	3,360,000 per cubic millimetre.
Leucocytes, . . .	=	13,200 „ „

This estimate practically agrees with the last, except for the fact that the hæmoglobin is lower and is more in accordance with the earlier reports. The estimation of the relative proportion of the various ordinary forms of leucocytes was essentially the same as indicated by Professor Muir.

The other facts of the case, which may be stated just now, are these:—There has been no evidence or history of hæmorrhages. This is true also of the retina, as frequent ophthalmoscopic examination has shown. There has been no gastro-intestinal disturbance nor complaint beyond weakness, slight breathlessness, frontal headache, and pain in the region of the spleen, of which she has never given a very accurate description. With regard to the temperature, it was practically normal the whole time she was in the hospital, occasionally it approached near 100° F. and only on two occasions (the evenings of 3rd and 4th February) did it rise above this, and then only to 100·2° F. and 100·4° F.

While the patient was in hospital the urine showed no abnormality; lately, however, there has been detected a trace of albumen, but unassociated with tube-casts. The tests for blood, sugar, and bile were negative.

On one occasion (11th October) it presented a peculiar reddish colour, probably due to uroerythrin, and a copious deposit of urates and uric acid crystals.

These, gentlemen, are the important facts of the case. Now I will lay before you what has been obtained regarding the history.

The father is a mason, and seems to be affected with some chronic pulmonary condition. No detail as to his history was obtainable. The mother married at 24, and has had nine pregnancies.

The patient was the second child; the third, fifth, and sixth pregnancies resulted in miscarriages, the seventh in a birth, premature by three weeks.

The above suggests a specific element, but no indications of congenital syphilis in any of the children could be elicited

from the mother. It is worth noting that whatever was the cause of the "miscarriages," they occurred after the birth of the patient. Too much stress, however, cannot be put upon such a fact as weighing against the possibility of a specific taint being present.

There is, at the present time, no physical evidence of the child having been the subject of congenital syphilis, and the same is true of rickets.

There is nothing noteworthy in the history of the patient as an infant; but between the ages of 3 and 7 it had measles, whooping-cough, and scarlet fever, and was very ill during each of these illnesses. It was a month or two after the scarlet fever that the mother noticed the child becoming extremely pale and very weakly, and on this account she was not allowed to attend school for about six months.

Later, when the child was 8 years old, Dr. Ritchie (Pollokshaws) was called in, who, according to the mother, pronounced the child "bloodless." She was, however, in a short time allowed to return to school, but little improvement took place in her condition.

When 9 years of age the child had a very serious illness, regarding which Sir William T. Gairdner obtained the following information from Dr. Ritchie (Pollokshaws):—

"About six years ago I was called in, and found the patient in a very distressed condition, with rapid breathing, tender abdomen, high temperature, highly anæmic, and with a pulse so rapid and compressible that I feared she was in a moribund condition.

"Examination showed a very much enlarged and painful spleen, but there was so much œdema that I could not make out anything else.

"Of course, I gave an unfavourable prognosis, but, to my astonishment, after treating her for a few days with potassium acetate and a dose of pulv. jalap. co. she got much easier from the disappearance of the œdema.

"I could then feel that the spleen was very much enlarged, but not so painful. After a few days the parents intimated that they would send if she got worse. . . . To my surprise she was out again before long, and, on examining her, when visiting a neighbour, I found her spleen almost natural; but she was very anæmic. I have not seen her for a long time."

At the onset of this illness, the mother states that the child to her seemed almost unconscious. For five days she never spoke to anyone. The pain in her side appears to have been, from the mother's statement, a distinct feature of her illness.

Some months elapsed before she gathered any strength, but she never regained it to any great extent. She has remained weakly and anæmic ever since, and has never been able to attend school for any length of time. Before admission to hospital she had been steadily falling off, both in strength and weight, certainly for some months, probably for a much longer period, but the pallor does not appear to have appreciably increased. Her appetite has been very variable, sometimes fairly good, but more commonly very poor. There has been no sickness nor vomiting, but headaches frequently trouble her.

*Diagnosis.*—In trying to form a proper diagnosis in this case, we must, I think, recognise the fact that it began in early childhood, and, I think, probably before the time of the illness during which Dr. Ritchie was in attendance. The mother, I think, has recognised that her child from very early age has been peculiarly pale. This became more evident after the scarlet fever, and culminated in the rather obscure but severe illness just referred to.

Now, in considering the diseases which may be associated with marked anæmia and enlargement of the spleen, it should not be forgotten that in children rickets and syphilis are distinct causes, no doubt at a much earlier age. I refer to this, not so much in regard to rickets, because there is no evidence of past rickets, but chiefly on account of the fact that there is in the mother's history after marriage the suggestion that specific disease might be a factor in the production of the condition.

The other diseases in which we may have anæmia with enlargement of the spleen are these—Leucocythæmia, Hodgkin's disease, pernicious anæmia, splenic anæmia.

*Leucocythæmia.*—In the two forms of this disease—(a) spleno-medullary; (b) lymphatic—we have anæmia and enlargement of the spleen, but it is only in the lymphatic form that we have usually the lymphatic glands enlarged. We could not, therefore, exclude leucocythæmia in this case without an examination of the blood. In this connection it should be remembered that in some cases the actual number of leucocytes may not exceed very much that of normal blood, but when this is the case we can always depend upon the character of the leucocytes to indicate the condition. In the spleno-medullary form the chief fact is the presence

of a large number of marrow-cells (myelocytes), while in the lymphatic form there is a distinct relative excess of lymphocytes.

Now the blood in the present case in no way suggests leucocythæmia of either form. We have a slight increase of the leucocytes (leucocytosis), but we have really no great variation in the due proportion of the several varieties to one another. The presence of the nucleated red corpuscles and myelocytes were few in number, and have a certain grave significance, but none in suggesting leucocythæmia.

*Hodgkin's disease.*—The chief fact in the diagnosis of this condition is the enlargement of the lymphatic glands. This does not constitute an important feature in this girl's case.

The spleen is the chief organ involved, and while the spleen is in Hodgkin's disease frequently enlarged, the enlargement is seldom very apparent until the lymphatic glands are very distinctly involved, and far beyond what is present in this case, otherwise one could not by the examination of the blood exclude such a diagnosis.

*Pernicious anæmia*, again, is a disease chiefly of adults. In children it is rare. The disease is progressive in its character. The hæmorrhagic tendency is common. The spleen may be slightly enlarged, but great enlargement is not a feature of the condition. In all these respects our case differs from "pernicious anæmia," so also with regard to the examination of the blood. Though the poikilocytosis and the presence of the red nucleated corpuscle and even the leucocytosis under certain conditions are compatible with this diagnosis, it is not so with the relative diminution of the red blood corpuscles and the hæmoglobin. In pernicious anæmia the hæmoglobin does not suffer the same diminution that the red blood corpuscles do. In the present case the diminution is most of the chlorotic type, the percentage of red blood corpuscles being greater than that of the hæmoglobin.

*Splenic anæmia* is the only name that can be given to the condition present in this case.

The name is not one of the best, because it is by no means an ascertained fact that the anæmia is caused by the condition of the spleen. The anæmia and the enlargement of the spleen being two very prominent features of the condition, the name may very well remain for want of a better.



Two very definite conditions have been described under this name, and yet the case presented to you differs from both in certain important respects.

The first type is fully described by West in what is perhaps the most recent article on the subject. This will be found in Clifford Allbutt's *System of Medicine* (vol. v, p. 539), and it is in reference to this article that Sir William T. Gairdner very fully discussed the case when it was under his charge. West's initial definition of splenic anæmia is that it "is a form of profound anæmia, progressive in character, ending fatally, generally of no long duration, associated with great enlargement of the spleen, but without leucocytosis or enlarged glands."

In the later stages of the disease the anæmia is profound, the loss of strength is extreme. The patient suffers attacks of severe pain in the region of the spleen. Hæmorrhages, especially epistaxis, are common. The temperature is usually raised, and of the hectic character. The disease is one of adult life, though a case as young as 9 years has been recorded. The duration is not long, usually from six months to two years, rarely longer, though a case has been reported by Müller extending over four and a half years.

The case before you agrees in some points with the above description. There is the anæmia, chiefly of the chlorotic type, and the enlargement of the spleen, associated with attacks of pain, but only on one occasion of a severe character. The lymphatic glands are only slightly enlarged in some regions. There are, however, very essential points of difference. Perhaps the most important is that the disease has not shown the progressive character described above. The patient has certainly been affected for seven years, and probably for a year or two longer, and of late, instead of there being deterioration of health, there has been slight improvement. She has gained nearly 10 lb. since February last. Though this is not a great deal, it is in the right direction. The condition of the blood has also improved a little.

Again, there is the absence of all tendency to hæmorrhages, and though the temperature when she was first admitted to hospital was of doubtful significance, yet it could never be said to have shown anything like the type of hectic fever indicated by West as being usually present.

Lastly, the age of the child when she first turned ill was one at which the disease is uncommon, though curiously enough the child was then 9 years old, the age given of the youngest case on record.



Reference must now be made to a second form of splenic anæmia which is found in infants. West made special reference to this condition in a "Discussion on Enlargements of the Spleen in Children," which he opened at the annual meeting of the British Medical Association held this year at Ipswich. A full report of this discussion, and of West's remarks on this form of splenic anæmia, will be found in the *British Medical Journal* (1st September, 1900, p. 567).

I will not enter into the description of this condition further than to state that we may have in the infant, as in the adult, a profound anæmia, associated with great enlargement of the spleen. The liver in about 50 per cent of the cases is enlarged, while there is little or no general enlargement of the lymphatic glands. The examination of the blood shows the anæmia to be of the chlorotic type, but nucleated red corpuscles and megalocytes are often found. Hæmorrhages are not uncommon. Fever may be moderate or of the hectic type; usually there is none. Gastro-intestinal disturbances are common. This condition in the infant is by no means of the same grave character as that first described as occurring more commonly in the adult. Nearly 40 per cent of the cases of splenic anæmia in the infant make complete recovery. In some cases, however, the health seems restored, and the spleen is much reduced in size, but relapses occur, so that though in the end recovery may take place, yet the duration may extend over many months, and the spleen may remain enlarged for two or three years.

Thus it is that cases recognised for the first time in young children have probably been first affected in infancy. But the case I have shown you does not seem to have been first affected in early infancy. In any case it presents characters much more persistent than anything represented in the above description. The anæmia and the enlargement of the spleen has persisted probably for a considerable number of years, associated with a varying degree of asthenia, and, again, the hæmorrhagic tendency, as has been pointed out, is absent in this case, so also is another feature of splenic anæmia in infants—gastro-intestinal disturbances.

For these reasons we cannot say, with any degree of assurance, that the condition could have arisen out of this so-called splenic anæmia of infancy, though the non-progressive character of the condition is more in accordance with this type than with the type first described, so commonly met with in adults.

Our idea of splenic anæmia, I think, cannot be limited to those two types of cases.

Many cases will be found where anæmia and enlargement of the spleen go together, but not of a progressive character, and with no hæmorrhagic tendency. The anæmia, however, tends to persist, and the spleen remains enlarged. I have seen such cases in children far beyond the age of infancy, also in young adults, and I do not think they can all be assigned to the class of secondary anæmias associated, for example, with syphilis. These seem, like this case, primary anæmias, even although they have a doubtful history as far as specific disease is concerned. On the other hand, many cases have no such suspicious history at all.

It seems, therefore, to me that we must recognise other cases than those described by West under splenic anæmia, tending towards a fatal termination, and the infantile form where cure is not uncommon within a comparatively short period.

It may be that we need a nomenclature that will separate the different forms, but we will require to know much more about the pathology of these conditions before any such differentiation can take place.

In the meantime, splenic anæmia must consist of a series of cases, by no means the same in their origin and progress, as the types already discussed distinctly show, but all characterised by marked anæmia and enlargement of the spleen, and with blood conditions which do not permit them being classified with any well recognised type as we know them at present, such as pernicious anæmia and leukæmia.

*Causation.*—The most probable cause in operation, apart from constitutional diseases, in many of these cases is not so much a disease of the spleen or an overactivity of its hæmolytic function, causing an impoverishment of the blood, as a toxæmia, the nature of which it is impossible as yet to determine, but suggested in many cases (as in rickets and the infantile form of splenic anæmia) by gastro-intestinal disturbances, the alimentary canal being in these cases the possible source of the toxins. Other forms of toxins may have their origin elsewhere, and be of a different nature.

Our case has never been the subject of gastro-intestinal disorders, and it would be vain to speculate further on the exact cause.

With regard to the treatment adopted, it was chiefly of

a general character; at first, rest in bed with good food, and later, the administration of arsenic alone, then of arsenic combined with iron.

In presenting this case before you, I have to acknowledge the use of the report of the case drawn up by Dr. Watson, late house physician to the Western Infirmary, and of notes on the case dictated by Sir William T. Gairdner. I have also to acknowledge the kindness of Professor Muir in granting me the use of some of the microscopic slides which demonstrate the blood condition. These showing the nucleated red corpuscles and the myelocytes are his, the others showing the ordinary forms of leucocytes and the eosinophile cells have been prepared by myself.

*Professor Stockman* said that he considered the case to be undoubtedly one of splenic anæmia. He had seen several such cases within the past eight years, and one case corresponded exactly in all its symptoms with Dr. Ness's case. In that case the spleen was still enlarged; hæmoglobin, 50 per cent; red blood corpuscles, 3,000,000 per cubic mm. Now and again she complained of attacks of pain in the region of the spleen. She has had hæmorrhages from nose and elsewhere, but never suffered from dyspepsia. He does not think the term splenic anæmia a good one for this disease, as the spleen has nothing to do with the production of it. The anæmia is due to hæmorrhage into spleen and liver, and the yellow colour in the skin is due to the same cause. It is difficult to assign a cause for the inflammation. There is no special form of treatment. Arsenic and ferrum have no effect on the disease.

*Dr. W. K. Hunter* said that, to him, splenic anæmia was a somewhat obscure disease. He regarded it, however, as having a close relationship to Hodgkin's disease and to the different forms of leukæmia. Indeed, he held that splenic anæmia had much the same relationship to splenic leukæmia that Hodgkin's disease had to lymphatic leukæmia. In Hodgkin's disease there was a general enlargement of lymphatic glands, but no considerable increase of lymphocytes in the circulation. In lymphatic leukæmia there were the same enlarged glands, but, in addition, great increase in the number of lymphocytes in the blood. In splenic anæmia there was the enlarged spleen, but no excess of white blood corpuscles, while in splenic leukæmia the enlarged spleen with great increase of white corpuscles in the blood. Otherwise, the symptoms in the four different conditions were much alike,

except that, in the cases of leukæmia, they were much more acute than in the cases of splenic anæmia and Hodgkin's disease.

As regards the relationship of Hodgkin's disease to lymphatic leukæmia, it was difficult to be certain that the two conditions were not just different stages of the same disease. Clinically, the chief difference between the two depended on the number of white corpuscles in the blood. Pathologically, the difference lay (at least according to certain pathologists) in the presence or absence of lymphocytes infiltrating the liver, kidneys, and other tissues. By that was meant that in cases of Hodgkin's disease there was neither increase of lymphocytes in the circulation nor increase of adenoid tissue in the liver, while in lymphatic leukæmia there were both. But there were cases on record which seemed to form a connecting link between these two diseases, cases which were clinically Hodgkin's disease, but which on *post-mortem* examination were found to have the characters of lymphatic leukæmia. It is difficult, then, to understand such cases, unless Hodgkin's disease be regarded as a form of lymphatic leukæmia. The same difficulties would seem to apply to the differentiation of splenic anæmia from splenic leukæmia. Here, again, there were cases which clinically had all the features of splenic anæmia, but which on *post-mortem* examination showed infiltration of the liver and other organs, just as in a case of splenic leukæmia.

As to the etiology of splenic anæmia, little was known. The anæmia seemed to be due to destruction of red blood corpuscles rather than to deficiency in their formation. The relationship of the enlarged spleen to the anæmia was a matter in dispute, but the fact that five cases had been recorded, where excision of the enlarged spleen was followed by disappearance of the anæmia, argued in favour of the spleen being a factor in the production of the anæmia. Whether the red corpuscles were destroyed in the spleen, or in the general circulation by some internal secretion derived from the spleen, it is difficult to know.



## MEETING III.—2ND NOVEMBER, 1900.

*The President, MR. H. E. CLARK, in the Chair.*

I.—CASE IN WHICH GASTROSTOMY HAS BEEN PERFORMED  
FOR ŒSOPHAGEAL STRICTURE CAUSED BY SWALLOWING  
CAUSTIC ALKALI.

BY DR. W. F. GIBB.

J. G., aged 3 years and 6 months, was admitted on 23rd January, 1899, to Paisley Infirmary. Two months previously he drank a quantity of caustic soda solution. He recovered satisfactorily from the immediate effects of the accident, but gradually manifested difficulty in swallowing. On admission he was emaciated and pale. He could only swallow small quantities of milk with great difficulty. Taking a teaspoonful into the mouth, he kept it there a few seconds, and then apparently forced it down. After ten minutes or so, about half the milk returned.

Mucous membrane of mouth and larynx were pale, but fauces showed no cicatrices. After a few days he began to swallow milk somewhat better. In February several unsuccessful attempts to enter the stricture were made, but on the 24th it was dilated by passing olive-pointed whalebone sounds, up to second largest size of the set. The result was that for a month he was able to swallow bread, porridge, and mince-meat. In April he was unable to swallow solids; a partially successful attempt to dilate was made, and on 6th April he was dismissed somewhat improved.

On 4th June, 1900, he was readmitted. During the past fourteen months he had lived on milk and corn-flour. Three days ago dysphagia became complete. An attempt was made to pass bougies, but unsuccessfully. At a point  $6\frac{1}{2}$  inches from the teeth the bougie met what appeared to be a completely closed part of the œsophagus. After the effects of the chloroform passed off he was able to swallow milk, and by 6 P.M. had taken one pint. Next day, however, he was absolutely unable to swallow a single drop.

On 7th June gastrostomy (Frank's method) was performed. Again it was found that, on recovering from chloroform, he could swallow milk fairly well.



On 9th June the stomach was opened, and an indiarubber catheter inserted. He remained in infirmary until 17th July. The gastric fistula acted perfectly, and he was regularly fed by injecting semi-liquid food into the stomach. Some days he was unable to swallow even milk, but when dismissed had improved, and could swallow semi-liquids.

On 17th August he came in for a few days. The gastric fistula had, through an overlook, been allowed to close. As he was able to swallow porridge, bread, and biscuit, nothing was done beyond an unsuccessful attempt to pass the œsophageal sound.

His mother informs me that for some time past he has only been able to swallow liquids, such as milk and thin corn-flour, but not bread; but days pass when he has great difficulty. Not long ago he ate some potatoes, and for a week after was much worse. His parents decline to permit further treatment. His general health is rather poor; he is small, pale, easily tired, and somewhat thin.

*Remarks.*—I understand it is not often an accident occurs to produce such serious stenosis of the œsophagus in a child. I have not been able to get any information regarding the strength of the caustic solution swallowed, but as the child's stomach seems not to have been permanently damaged, the solution was probably not highly concentrated. Doubtless there is some degree of cicatricial stenosis. And yet, that the dysphagia is not entirely due to that is likely, from the facts that chloroform anæsthesia was always followed by improved swallowing and that some days the child swallows better than others.

It has been urged as an objection to gastrostomy that, if by and bye one wishes the fistula closed, this will be a matter of difficulty. This case shows that, performed by Frank's method, the fistula will heal firmly unless carefully kept open.

## II.—FOUR CASES ILLUSTRATIVE OF THE LOCAL LESIONS RESULTING FROM THE SWALLOWING OF LIQUID AMMONIA.

BY DR. WALKER DOWNIE.

IN connection with the interesting case just shown and described by Dr. Gibb, and which I had the opportunity of examining some months ago, I thought it might be of interest to members of this Society should I relate the results of

ammonia drinking in four of the more serious cases which have come under my observation recently. Two of those cases illustrate the immediate local effects following the drinking of strong solutions of ammonia, and two the later results.

Solutions of ammonia are now largely used for domestic purposes, and this may account for the increased number of cases in which it has been the cause of traumatic inflammations of the fauces, pharynx, and oesophagus.

CASE I.—A few days ago, at the request of Dr. Finlayson, I saw one of his patients in the Western Infirmary, who, in a state of frenzy, had swallowed some liquid preparation of ammonia.

On admission to hospital on 11th October, the day following receipt of injury, there was cedema of the uvula, extensive erosion of the palate and of the lining mucous membrane of the cheeks, and her voice was husky. Attempts at swallowing caused severe pain. After admission she vomited dark coloured material like altered blood, and the stools were for some days black in colour. She at that time also complained of tenderness over the sternal region, but not in the epigastrium. Eight days after the swallowing of the fluid I examined her throat. There was then a general injection of the palate, and the uvula, from its tip up to its junction with the soft palate, was coated with a firm fibrinous exudation. Patches of a similar inflammatory exudation were also present over portions of the right tonsil and right posterior pillar, on the lower part of the posterior wall of the pharynx, over both arytenoids, and over the upper border of the epiglottis.

Both ventricular bands and both vocal cords were deeply injected, but there was no exudation over them, nor were there any traces of cedema.

The fluid remaining in the bottle from which the patient drank was examined by Professor Glaister, who reported to Dr. Finlayson that, of the 100 parts it contained, there were 9·8 parts of pure caustic ammonia and 90·2 parts of water; and he remarked further that liq. ammonia fort. as used for chemical purposes contains 36 to 37 parts per cent of pure caustic ammonia, and he concludes that the liquid found in the bottle corresponded to a diluted commercial ammonia which is ordinarily sold for domestic washing purposes.

CASE II.—On 16th June, 1900, Donald R. was admitted to the Western Infirmary under my care. He was one of the crew on board a steam yacht, and, with the others, had been

working late loading coals at Ardrossan. When they had finished about 1 A.M., the ship was got under way, and the crew went below. There glasses were produced, and what was thought to be whisky served out. Donald was the first to drink it. At least half of the contents of the glass entered his mouth, and part had been swallowed before he was aware of the mistake. The fluid was liquid ammonia, used for cleaning purposes in the steward's department. Two and a half hours later the yacht reached Tighnabruaich, where he was seen by a doctor, who, after administering treatment, sent him to Glasgow.

On swallowing the ammonia he had at once experienced a painfully hot burning sensation in the mouth and throat, and very shortly afterwards he vomited, but he took no notice of the appearance of the vomited matter. On arrival at the infirmary he still complained of the burning in his throat. His temperature was  $101\frac{1}{4}^{\circ}$  F. Vinegar, freely diluted, was at first given, and olive oil in frequently repeated doses thereafter.

On examination, the palate, fauces, pharynx, and larynx were found to be deeply injected and considerably swollen. On the following day there was a greyish exudation over the uvula and the free border of the palate, any interference with which caused the surface to bleed. There was a similar exudation over the lip of the epiglottis and over the posterior half of each aryepiglottic fold, and both arytenoid eminences were cedematous. Any attempt to swallow caused severe pain, chiefly about the level of the larynx, but at the end of eight days, when he was dismissed from hospital, pain on swallowing had practically gone, the exudation had been cast off, and the parts affected had almost assumed their normal appearance.

CASE III.—Francis C., aged 50, a painter by profession and a tippler by habit, returned from his work one evening in March, 1899, to find, on entering the kitchen, a black quart bottle on the dresser. This he at once laid hold on, and, putting the bottle to his mouth, gulped down a quantity, when, to his horror, he found that it had contained, not whisky, but liquid ammonia, used by his wife for the washing of clothes.

For days following this occurrence his throat was highly inflamed, swollen, and very painful.

He came under my care on 23rd May, two and a half months after the accident, on account of difficulty in swallow-

ing. He could swallow fluids only, and these passed down very slowly, and had to be taken cautiously. No evidences remained of the injuries in the fauces, pharynx, or larynx.

A whalebone sound, with ivory olive end of 14 mm. diameter, was used to examine the œsophagus. A stricture was encountered first at the pharyngeal opening of the gullet. Slight pressure enabled the olive tip to get through, and the instrument then readily passed downwards to a distance of  $12\frac{3}{4}$  inches from the incisor teeth, where a second stricture was encountered, and beyond which the instrument could not go, even on firm pressure.

A No. 12 conical gum-elastic bougie was then used. This was passed through the upper stricture easily, and the point passed through the lower stricture with comparative ease, but the shoulder was caught tightly, and firm pressure was required to push the instrument on into the stomach.

CASE IV.—Eliza R., aged 66, came to my department at the Western Infirmary in August, 1899, complaining of difficulty in swallowing since the previous March.

Throughout the winter she had had bronchitis, and had some medicine to relieve her cough. One night in March she was so distressed with her cough that she rose out of bed to take some of the medicine, but by mistake she took a dessert-spoonful of strong liquid ammonia, used by her for washing clothes. The burning pain in the mouth and throat produced by the ammonia was very severe. She was seen by her own doctor, and under treatment the eroded surfaces healed.

Two months later she experienced difficulty in swallowing solid food, and from the end of June her diet had consisted of milk, soups, and tea. Since that date, also, she has found that even bread softened in those fluids would not pass over.

The same whalebone sound, with ivory olive end (14 mm. in diameter), was used to examine the gullet. At a distance of  $5\frac{1}{2}$  inches from the upper gum a stricture was detected. With slight pressure the sound passed through the stricture, but was again caught at a distance of 10 inches from the upper gum, where the further progress of this sound was checked. A bougie of 8 mm. diameter was then used, and this passed through both constricted areas and on to the stomach with comparative ease.

In the two latter cases the regular passage of graduated bougies was employed for weeks, with great benefit. This was most marked in the latter case. The patient was most



regular in her attendance, and she can now enjoy and swallow ordinary diet, including butcher-meat, if finely minced and well masticated.

*Remarks.*—The local effects which follow from the drinking of liquid ammonia naturally depend largely on the strength of the solution. When the fluid taken is that usually employed for domestic purposes, there is, as an almost immediate result, acute inflammation of those parts with which the fluid has come into contact, and this is accompanied by considerable pain. In some cases the mucous membrane of the palate, fauces, and pharynx may not only be deeply congested, but separation of the epithelium may occur, and the surfaces may bleed readily on being touched.

This inflammation is almost always followed within the first twenty-four hours by the appearance of a fibrinous exudation, which is usually found over the uvula, free border of the palate, on the lip of the epiglottis, and over the arytenoid and aryepiglottic folds. In all cases which I have had occasion to examine, the surfaces so injured healed satisfactorily, and no scar remained to indicate the site of the injuries received. But while this is the case in connection with the fauces, pharynx, and larynx, serious cicatricial changes very frequently occur within the gullet, so frequently, I think, as to make this the rule; and these changes take place even in those cases where the injuries to the upper parts have been considered of a trifling character.

The result of the formation of these cicatrices is that deglutition is interfered with. This cicatrisation appears to set in within a comparatively short time after the parts have been injured—in from one to three months after the swallowing of the ammonia.

Another point which I have noted in almost every case of the kind which has come under my observation is that there are two strictures—one close to the mouth of the gullet, and a second at a variable, but very distinctly lower, level.

Treatment by gradual dilatation in this form of stricture is, *if resorted to early*, usually followed by most satisfactory results.

In dealing with strictures of the gullet resulting from traumatic œsophagitis, I am in the habit of using the whale-bone sound, with olive-shaped ivory end, for diagnostic purposes. In pursuing treatment, however—that is, for purposes of dilatation—I employ the bulbous cylindrical gun-elastic bougie, or the flattened bougie (oval in section),



and the largest sizes which can be passed are used; for complete dilatation is necessary to give anything like permanent relief.

### III.—NOTES OF TWO CASES OF CRANIAL DEPRESSIONS IN NEW-BORN INFANTS SUCCESSFULLY TREATED BY A NEW METHOD.

BY DR. J. M. MUNRO KERR.

The bones of the foetal vault are very resilient, consequently a very little force applied to the depression from the inside is all that is necessary to relieve the indentations. If proof of this is required I would refer you to the two cases of Boissard<sup>1</sup> and Sacheyrin.<sup>2</sup> The force, however, must be applied early, otherwise difficulty may be experienced in raising the bones.<sup>3</sup> Indeed, it was knowing this resiliency of the bones, but not being able to apply a force to the inside, that led some of the older writers to suggest cupping-glasses, air-pumps, adhesive plasters, with cords attached to their centre by which traction could be executed. Indeed, except for such devices, which have never been taken seriously, and opening the skull, as has been done by Boissard and others, no attempt has been made at the immediate relief of the deformity.

CASE I.—About three years ago I attended a lady in her first confinement. Everything went on satisfactorily except that the head took up and maintained an occipito-posterior position. As the second stage was being unduly prolonged, I applied forceps, the head being at the outlet. With a moderate degree of traction I delivered her. The child, a female, was of average size, and mature. It was slightly asphyxiated, and had, very much to my surprise, a deep, spoon-shaped depression of its right frontal bone. With a little cold water and slapping, &c., the child cried, and, indeed, I could not say that it was much affected by the deformity.

While looking at the indentation, it occurred to me that, by compressing the head firmly antero-posteriorly, sufficient pressure might be exerted on the depressed bone to cause it to spring out. I hardly expected the simple manœuvre to be so successful, for in the first attempt the depression came out, producing a sound as when a dent in a felt hat is removed. The infant certainly cried louder soon after.

<sup>1</sup> Boissard, *Notes et Observations Cliniques*, Paris, 1892.

<sup>2</sup> Panzani, *Thèse*, Paris, 1896.

<sup>3</sup> Prudhomme, *Thèse*, Paris, 1900.

After this success I tried the effect of compression on artificially produced depressions in stillborn children. Sometimes I have been unable to produce such depressions, but, in all, when I have found it possible, the indentations have been relieved by antero-posterior compression, indentations of the parietal bones especially coming out with great ease.

Since the one described, I have seen no case of indentation of the skull, so I have had no further opportunity of trying the treatment.

I am able, however, through the kindness of Dr. Malcolm Black, Physician to the Maternity Hospital, and Dr. Dunning (I asked the former to be good enough to try the treatment if a case occurred in his practice), to report a second successful case.

CASE II.—Mrs. X., iii-para, had been previously delivered of two dead children, the first after craniotomy and the second after induction and craniotomy. At the third confinement, a month or two ago, Dr. Dunning, who was in attendance, called Dr. Malcolm Black in consultation, and the latter delivered the child, which presented by the breech. The extraction of the after-coming head was attended with very great difficulty, as the pelvis was very much deformed. The child's heart was beating very feebly. Over the left frontal bone there was a large, deep, spoon-shaped depression. Artificial respiration brought about little improvement in the child's condition. Recollecting my request, Dr. Black tried compression, with the result that the indentation came suddenly out with a jerk. The child almost immediately after began to make attempts at respiration, and the heart commenced to beat more strongly; indeed, before long it was quite out of danger.

How far this simple method of treatment may prove successful I cannot say, as the cases described are the only two living children on whom it has been tried. I am hopeful, however, that in most cases it will be successful, because, as Milne Murray has pointed out, compression of the skull in an antero-posterior direction brings about an elongation of the vertical diameter of the head, and indentations are almost always situated in the parietal or frontal bones.

A paper dealing with the subject in greater detail will, I hope, shortly appear in one of the weekly journals.

IV.—TWO CASES OF CRANIAL DEPRESSION IN INFANTS  
TREATED BY OPERATION.

BY DR. J. H. NICOLL.

CASE I.—T. E. came to the Children's Hospital in April, 1900, at the age of 2 weeks. Fig. 1 is a reproduction of a photograph taken at that date. The history of the case, as kindly given by the medical man who sent the child, is, briefly, that it is the second child of a mother with a contracted pelvis—that the former child was stillborn, having perished during a very protracted labour terminated by a difficult forceps delivery—that when called to the birth of the present child the doctor found the head firmly impacted in the pelvic brim, the left frontal region being indented by the sacral promontory. Delivery was effected by means of axis-traction forceps. The child was healthy, but exhibited the spoon-shaped depression of the frontal bone shown in the photograph.

Such birth depressions not infrequently disappear spontaneously. In the hope that spontaneous cure might result in this case, operation was postponed for a time. No improvement taking place, operation was carried out on 19th June, at the age of 10 weeks. It was found easy to raise the bone to the proper level, but impossible to keep it there. The depressed area was therefore removed. The child was treated as an out-patient, and the wound healed by first intention.

CASE II.—M. C. came to the Children's Hospital at the age of 4 months, sent by the medical man who had attended her for a depression of the left parietal bone, the result of a fall three weeks previously. Fig. 2 is a reproduction of a photograph taken on 6th July, just before operation. As in the former case, it was found impossible to maintain the bone at the level of the surrounding skull, and the depressed area was removed. The child was treated as an out-patient, and the wound healed by first intention.

*Remarks.*—The points of interest in these cases are—

1. The comparative rate of reproduction of the bone removed. In the two cases the area of bone removed was practically of the same extent. The two areas are in the immediate vicinity of centres of ossification (frontal and parietal respectively). The operation was identical in the two cases—pericranium raised with the scalp, and replaced with it, the





FIG. 1.

Depressed fracture of skull in an infant of 2 weeks, subsequently treated by operation.

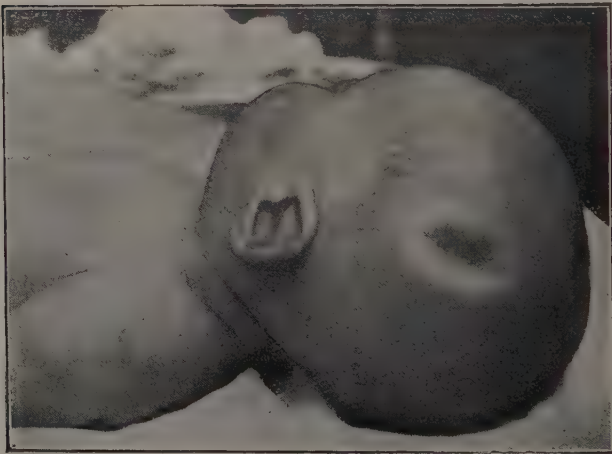


FIG. 2.

Depressed fracture of skull in an infant of 4 months, subsequently treated by operation.









FIG. 3.

BABY D. H.—Cervical spina bifida—meningocele, into the neck of which the spinal cord projects as a loop.



FIG. 4.

BABY F. S.—Cervical spina bifida—pure meningocele.

Chalmers. Both proved pure meningoceles, and the operations offered no points of special interest. The children were sent home after operation, and were nursed by the mothers under the directions of Sister Laura. Both healed by first intention, the sutures being removed on the seventh day.

Fig. 5 is a reproduction of a photograph of the patients taken in the early part of October. At that time the patients were all well, as they are now. (Patients shown to Society.) Baby M. M., though the oldest, is somewhat smaller than the others, being rather puny, though otherwise apparently healthy.

*Remarks.*—Spina bifida is not uncommon in the cervical region (though, of course, comparatively much less frequent than in the lumbar region). I have operated on a number of cervical cases, one of which, operated on at the Children's Dispensary in 1896, was, like the three foregoing cases, successfully treated as an out-patient, the child being nursed by the mother under the directions of Sister Edith.

Of all cases of spina bifida, those of the cervical region are the best suited for post-operative treatment as out-patients. I have, however, treated cases of the affection in the lumbar region as out-patients after operation, and have shown such cases to this and other societies. With properly selected cases I have found the results satisfactory. To ensure success, selection is less concerned with the infant than with the mother and her circumstances. Given a tiny infant, the chances of success in the mother's care, provided she is intelligent and can devote the first few days entirely to nursing under specific instructions, are quite as good as in the wards of an average hospital. The ideal conditions, such as may be obtained in private cases, include nursing by the mother and by two nurses in addition.

It is not necessary here to detail the steps of the operation carried out in these three cases. Full accounts of the different methods which I have followed in cases of spina bifida and of hydrocephalus may be found in the *Transactions* of this and other societies, and in papers on the subject in the *Glasgow Hospital Reports* (vol. ii), and the *British Medical Journal* (15th October, 1898).







F. S.

D. H.

M. M.



FIG. 5.

Photograph of the three cases of cervical spina bifida taken three and a half months and two months respectively after operation. Patients at this date aged—F. S., 4 months; D. H., 7 months; M. M., 7 months.



## MEETING IV.—16TH NOVEMBER, 1900.

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DR. J. LINDSAY STEVEN *in the Chair.*

## I.—SPECIMENS FROM A CASE OF ADDISON'S DISEASE.

BY DR. J. LINDSAY STEVEN.

Dr. Lindsay Steven showed the suprarenal capsules from a typical case of Addison's disease. He remarked that the present was the third case of morbus Addisonii which he had had under his care during the last five years, all of them having been verified by *post-mortem* examination. Specimens from the first of the three cases had already been shown at a previous meeting of the Society on 23rd October, 1896 (*Trans.*, vol. i, p. 209), and were now preserved in the museum of the Glasgow Royal Infirmary. In this case the clinical characters were quite unmistakeable, and the *post-mortem* appearances were typical. In the second case, where the specimens were not preserved, the clinical characters were not quite so indubitable, but the *post-mortem* revealed complete tubercular transformation of both suprarenal capsules. The third case, from which the specimens now shown were obtained, was in all respects perfectly characteristic and unmistakeable from the clinical aspect, and, as could be seen from the dissected specimens shown, there was complete tubercular destruction of both suprarenal bodies. In connection with the recent discussion between Sir Samuel Wilks, Bart., and Sir William T. Gairdner, K.C.B., as to the relationship of leucodermia to Addison's disease, it may be stated, in a word, that in none of the three cases was there the slightest trace of leucodermia.

The man from whom the specimens were obtained was a French polisher, aged 35. He was admitted to the Infirmary on 15th August, 1900, and died on the 23rd of the same month. He had not felt so strong since a rather severe attack of influenza in March, 1899, but did not consider himself seriously unwell till about three months before admission, when loss of strength became a very marked and distressing symptom. Discolouration of the skin was

not noticed either by himself or his friends until three weeks before admission, but then it was most marked, so much so that he might have been mistaken for a Hindoo. The blood-count showed no diminution of red corpuscles or of hæmoglobin. The buccal mucous membrane and the tongue were pigmented. The skin of the generative organs was black. In his childhood and youth he had suffered from glandular abscesses, probably tubercular, in both axillæ, but from the age of 17 till March, 1899, he had considered himself a healthy man. He rapidly sank after admission from debility, headache, sickness, and vomiting. Dr. Workman's summary of the *post-mortem* is as follows:—"Morbus Addisonii, with characteristic bronzing of the skin and pigmentation of the mucous membranes of mouth, conjunctivæ, and small intestine. Characteristic tuberculosis of both suprarenals, with advanced caseation and abscess-formation. No tuberculosis elsewhere in the abdomen. Heart healthy. Healed tubercle of left apex."

Perhaps the chief points to call attention to in this case are the very short duration of the cutaneous pigmentary changes—so far as can be ascertained, only about six weeks' duration in all—and the pigmentation of the mucous membrane of the small intestine, which was very marked and wide-spread. It is obvious, from the appearance of the suprarenal capsules, that the morbid process in them must have been of much longer duration, probably coinciding with the first onset of weakness after the influenza in March, 1899. The nature of the lesion in the capsules was proved by microscopic examination. Suprarenal tabloids, 5 grains night and morning, were commenced on 17th August, and had to be stopped on the 21st on account of the vomiting. If the tabloids were not the cause of the sickness and vomiting, which began on the afternoon of the 18th, then they were absolutely without any effect, so far as could be seen, upon the progress of the disease. In the first two cases suprarenal substance, though tried over a longer period, was likewise without effect.

## II.—FATAL CASE OF ANÆMIA FOLLOWING UTERINE HÆMORRHAGE.

By DR. T. K. MONRO.

The patient was a housewife, aged 42, who had a severe and prolonged flooding six weeks before admission. This



left her sick and very pale and weak. She had occasional losses for a time afterwards, and a second severe hæmorrhage, eight days before admission. Two days later she was sick, and vomited everything she took. Till the occasion of the first hæmorrhage, menstruation had been regular since the birth of her last child, more than three years before. She had been liable to attacks of breathlessness and palpitation since she had rheumatic fever four years ago, and there was also a tendency to diarrhœa which dated from a complete laceration of the perineum seven years ago.

The principal symptoms on admission (25th August, 1900) were pallor, weakness, thirst, and a soft and rapid pulse. A soft V.S. murmur could be heard at all parts of the cardiac area, and was conveyed into the lateral region and into the neck. Examination of the blood showed absence of rouleaux formation; red corpuscles 1,600,000 and white corpuscles 9,000 per c.m.; hæmoglobin, 20 per cent. O.E. normal, with the exception of pallor of the fundi. There was no enlargement of the spleen.

About a fortnight later there was a good deal of rouleaux formation, and the red corpuscles showed no alteration in shape or size. The red corpuscles had increased to 2,400,000. The whites were 13,400 per c.m. (two hours after breakfast). The differential count of whites showed—

Polymorphonuclear cells, . . . . .	70 per cent.
Large lymphocytes, . . . . .	20    "
Small lymphocytes, . . . . .	8     "
Eosinophiles, . . . . .	2     "

On 16th September she had another severe hæmorrhage, which induced a condition of collapse, with subsequent retching and abdominal pain. She was transferred to the care of Dr. Kelly, who dilated the cervix uteri and removed a sloughing submucous myoma of the size of a small orange. Early in October, after she had returned to the medical ward, rouleaux formation was found to be almost absent, the hæmoglobin was much below 10 per cent; red corpuscles 2,080,000 per c.m.; white corpuscles 9,000, with the proportion of 7 per cent large and 25 per cent small lymphocytes. There were no retinal hæmorrhages, but the blood was so pale that, in the right eye especially, it was scarcely possible to see the vessels. She had latterly intractable diarrhœa, and occasional elevations of temperature as high as 103°. She died on the 8th October, about three hours after a rigor, and three months after the first flooding.

The *post-mortem* examination showed the appearances usually met with in cases of pernicious anæmia, with the important exception that no hæmosiderin could be detected in the liver or kidney. The section of bone-marrow exhibited is taken from the femur, and shows that the adipose tissue is in great part, though not entirely, replaced by small lymphocytes, among which large multinucleated cells are scattered.

### III.—CASE OF CANCER OF THE SMALL CURVATURE OF THE STOMACH, IN WHICH A MYOMA OF THE STOMACH WAS SO SITUATED AS TO RESEMBLE A BALL-VALVE AT THE PYLORIC ORIFICE.

BY DR. T. K. MONRO AND DR. HUGH M'LAREN.

The patient was a labourer, aged about 56, who was admitted to the Royal Infirmary on 27th January, 1900, complaining of swelling of the abdomen. He had pleurisy thirty years ago, and, more recently, attacks of cold, but otherwise good health and fitness for work until the onset of obstinate constipation, with abdominal enlargement, anorexia, and emaciation, about three weeks before admission. There was no history of alcoholism. The swelling of the abdomen was due to fluid, and for this paracentesis was required. The malignant character of the disease was quite obvious during life, and patient succumbed on 4th February. After death, cancerous growths were found widely disseminated throughout the abdomen. The primary tumour was a cylinder-celled epithelioma of the lesser curvature of the stomach at about its middle. On opening the organ another tumour, about the size of a walnut, was found hanging from the lesser curvature, close to the pylorus, in such a position as to resemble a ball-valve at that orifice. Dr. Workman states that the stomach was dilated. Microscopic investigation shows that the growth consists of unstriated muscular fibre. The portion of this myoma now exhibited measures an inch and a quarter by seven-eighths of an inch (after hardening).

Some tumours—for instance, uterine myomata—are so common that their association in one individual with a malignant growth would scarcely call for remark. A more important combination was reported by myself to this Society in 1896 (*Transactions*, 1895-97, vol. i, p. 135; *Glasgow Medical Journal*, 1896, vol. xlv, p. 176). A man who died of cancer of the pylorus, at the age of 63, was found to have in his cerebellum a myxoma which had remained latent since about

the age of 16, at which time he had suffered from symptoms of intracranial tumour. In the present case, the association of the two distinct tumours in the stomach itself is curious enough, but very specially are the nature and position of the myoma remarkable. Nevertheless, it appears to have given rise to no symptoms that can be definitely referred to its presence. Everything can be accounted for as readily by the cancer, and it is noteworthy that the period of ill health extended back for only four weeks.

#### IV.—ACUTE LOBAR PNEUMONIA WITH UNUSUAL FEATURES.

By DR. T. K. MONRO AND DR. HUGH M'LAREN.

The patient was a brassmoulder, æt. 20, who was admitted to the Glasgow Royal Infirmary on 17th January, 1900. After *malaise* and occasional shiverings for a week, he had taken to bed on the 13th owing to a severe stitch in the right side, together with a sense of heat and sometimes cold. On admission, the clinical features corresponded to those of an ordinary acute lobar pneumonia. There was some suspicion with regard to the upper part of the left front, but the characteristic physical signs were detected at the right back, all over, except at the extreme base and, perhaps, the extreme apex. Two or three days later, the signs were well marked over the right front. By this time the pulse was markedly hyperdierotic; patient was delirious by night and restless by day; the tongue was dry and hard, and there was severe diarrhœa, the stools being pale yellow. Incontinence of urine and fæces set in later, and then picking at the bedclothes. Death occurred late on the 25th, nearly thirteen days after the onset of the pain in the side.

The unusual feature observed during life was the long duration of the disease without any change in the symptoms or physical signs to suggest that a crisis was approaching. After death, the naked-eye characters of the lung were quite in keeping. The organ was reddish grey, entirely consolidated and very firm. In front, there was a small abscess of the pleura which contained pneumococci. On microscopic examination of the lung itself, areas were found in close proximity to one another, some of which showed abscess formation, others resolution, and others abundant fibrin, and all of them hæmorrhage into the alveoli. The spleen was much enlarged, and contained pneumococci. Nothing was found in the intestines to explain the diarrhœa.

V.—SECTIONS OF LARGE INTESTINE FROM A CASE OF CHRONIC INTERSTITIAL NEPHRITIS, WHERE THE NAKED-EYE APPEARANCES RESEMBLED THOSE MET WITH IN DYSENTERY.

BY DR. HUGH M'LAREN.

*Clinical note.*—Married woman, æt. 49, admitted 4th September, 1900, in a comatose condition. Liable to ulceration of the legs for nine or ten years past. An attack of sickness and vomiting two or three months ago, and since then diarrhoea. For the past eighteen months, occasional weak turns which kept her in bed three to seven days at a time.

Present illness began 1st September, when she complained of feeling weak and ill. On the 3rd, she looked dazed, and seemed to have pain in the stomach. She had five epileptiform convulsions before admission.

On admission (4th September), coma. No palsy. Heart normal. Abundant moist râles in the lungs. Urine, of which a few ounces were drawn off by catheter, loaded with albumen. Temperature subnormal. Four short convulsive attacks, with increasing weakness. Death on 5th September.

At the *post-mortem* examination, the kidneys presented all the characters of chronic interstitial nephritis—they were small and dense, capsules were adherent, and the cortices were much diminished in thickness. The left ventricle was hypertrophied. The lungs, liver, and spleen were congested. The large intestine was considerably swollen, and the mucous membrane presented large folds, and was of a dark colour, as if it were infiltrated with blood. The summits of the folds were almost black in colour, and some of them showed small superficial ulcers. These changes were most marked in the rectum, and diminished slightly in intensity as you passed upwards, but they were still very well marked in the cæcum.

Sections from the large intestine were examined under the microscope. They show an extensive infiltration of the mucous and submucous layers with leucocytes. In some parts this infiltration seems to be aggregated, forming masses which are probably commencing abscesses. In the mucous layer, and also, to some extent, in the submucous, there is considerable hæmorrhage, which is evidently secondary to the inflammatory condition.

## VI.—A SMALL CONCRETION REMOVED FROM THE DUCT OF THE SUBMAXILLARY GLAND.

BY DR. G. H. EDINGTON.

Dr. Edington showed as a fresh specimen a small concretion removed from the duct of the submaxillary gland.

The patient was a boy, aged 16 years, who had presented himself at the dispensary of the Western Infirmary on the previous day. He complained of a "swelling under the tongue," which he had noticed for ten days. On getting him to turn up the tongue, considerable redness and swelling was noticed at the terminal portion of Wharton's duct, on the right side, close to the frænum. In the centre of the reddened area a small yellowish-white point was seen, and this, on being struck by the probe, proved to be calcareous. On grasping the swelling between the finger and thumb, it was found to be very hard.

The mass was fixed by grasping the mucous membrane behind with forceps; an incision was made over it with a tenotome, and the concretion was shot out by pressing between the finger and thumb. It was followed by a stringy, mucus-like material.

The proximal part of the duct was not apparently distended, nor was there any swelling appreciable in the region of the gland.

The concretion, which is a flattened ovoid, measures 6 mm. in length by 4 mm. in breadth by 3 mm. in thickness. It consists of an outer rind deposited on a central nucleus of about the size of a grape-stone. The nucleus is clearly visible through cracks in the rind.

Dr. Brodie, of the Physiological Department of the University, finds that the concretion "consists entirely of calcium phosphate, with some albuminoid matter which is not identifiable, but which is presumably mucus. Judging from its appearance in the test-tube, the (?) mucus formed about one-sixth of the bulk of the concretion. Carbonates, chlorides, and sulphates were absent."



## MEETING V.—30TH NOVEMBER, 1900.

*The President, MR. H. E. CLARK, in the Chair.*

## MY EXPERIENCES IN SOUTH AFRICA.

BY MR. H. E. CLARK.

When the history of the great Boer War comes to be written in earnest—the mass of material relating to it duly sifted, and the grains of corn separated from the bushels of chaff—one fact will, I think, stand out as the most prominent and characteristic feature, namely, the assistance rendered to all departments of both armies by volunteers of all gradations of experience and knowledge.

Never before in the history of our own country has a war been waged in a foreign land, wherein the civilian and pseudo-military elements have had so prominent a place. If this is true of the combatant forces, it is even more so of the medical branch, for the number of volunteer ambulances, field hospitals, and base hospitals sent out has exceeded every previous experience in the world's history. On the Boer side there appears (as far as I can ascertain) to have been very little organisation of hospitals attempted, or even thought of, before the outbreak of the war, and the Boers were in large measure dependent on the aid of the several ambulances sent out by the continental nations. It is one of the numerous things that our kind neighbours will, I fear, not put to our credit, that we were able to do without such extraneous aid, but we may fairly claim that, however tardy we were in rising to the occasion, the plethora of hospitals, doctors, and nurses lately in South Africa shows that we were not lacking in material. In such volunteer aid—both military and medical—Scotland has played her part nobly and characteristically. I leave the description of the eager rush of combatant officers and men to abler pens; my duty is limited to recording what has been done by the Scottish nation for the treatment of the sick and wounded in the war.

First, let me point out that the necessary funds, instead of being found by a few wealthy individuals, as was the case with several hospitals sent out from England and Ireland,





Scott's Hospital - D. D. C.  
Hornsea. 1890.

John Brod.







were raised by numerous contributions of moderate amount collected over the whole length and breadth of the land, so that the movement was in the truest sense national. Shillings were not despised where guineas could not be obtained, and donations of £50 or £100 were as gratefully received. It is much to be regretted that some of our friends in the east were not content to work with the Glasgow Committee, but must run "a boat of their own." But for this split Scotland might have sent out a fully-equipped hospital of 520 beds at the end of March, which would have reached South Africa in time to have been of service when the need was greatest. I can, however, bear testimony to the superexcellent equipment of the Edinburgh Hospital, and to the admirable work it accomplished, as well as to the friendly relations which subsisted between the staff of the two hospitals which represented Scotland. As to our own hospital (the Scottish National Red Cross Hospital), it was organised and equipped on the lines of a first-class civilian hospital at home, and the fact that the equipment was mainly in the hands of Dr. Mackintosh, the Superintendent of the Western Infirmary, is a guarantee of the highest efficiency and economy. I cannot speak too highly of Dr. Mackintosh's energy, ability and self-devotion. During the many weeks the hospital was in course of preparation he scarcely knew what rest was, and I claim for him a very large share of the credit of its success. Mistakes were made, of course, for in so large and novel an undertaking they were inevitable.

It would be ungracious to dwell on the omissions in the equipment, for most of them were due to losses in transport, but you will understand that we were seriously disturbed to find that we had arrived at our destination without an inch of sticking-plaster, with only twelve morphia suppositories, and with a stock of drugs so seriously inadequate that we could not write a prescription without first ascertaining from the dispenser what he could allow us to put in it. The selection of tortoise tents as the main provision for the treatment of patients was a wise one, and I can speak in very high terms of the satisfaction we had in their use. As compared with the usual hospital marquee, the tortoise tent was lighter, more easily erected, took less space, was cumbered with fewer tent ropes and pegs, and gave accommodation to ten patients instead of eight. Further, in consequence of their not being so high as the marquees, these tents were not so much damaged by high winds, and on two occasions, when the sand-storms prevailed, the marquees of No. 3 General Hospital were seriously interfered with, while our own camp escaped with very little damage, although we

were in a more exposed situation. For some time we were sorry that any Döcker huts had been sent out, for the first five were much damaged before they reached us, and the other five lay for nearly a month at Bloemfontein before we could prevail on the authorities to send them up. We got, however, to like them very much, for in them we obtained better protection from the sun in the day, the cold at night, and from sand and rain-storms when they occurred, than in the tents. Friends, who had been resident in South Africa for some years, expressed a doubt as to whether they would stand the tornados and heavy thunder-storms of the summer months, and I am sorry to say that since I left Kroonstad that opinion has so far been justified by one of the huts becoming completely wrecked by a tornado. About seventy stoves were sent out to heat the tents and huts, and of these we used three only, for the cold was only trying for a few hours in the night in the depth of winter, at a time, therefore, when the patients and most of the staff were in bed. Our staff of doctors and nurses was at all times far in excess of our requirements, and we were thus able to assist in the work of other hospitals than our own.

Leaving Glasgow on 20th April, we sailed from Southampton by "intermediate steamer," *Pembroke Castle*, and reached Table Bay on 12th May. This was the very day that Lord Roberts entered Kroonstad, and this circumstance settled our destination, for, following his custom, he collected the sick and wounded, and made such temporary provision for their treatment as was possible, and on the 14th telegraphed to the base for hospitals, doctors, and nurses to be sent up without delay. On the 15th, on my return, late in the afternoon, from a visit to the hospitals at Wynberg, I found it had been arranged that I should start by mail train that same evening for Kroonstad, taking with me five of the doctors and the seven nurses; and that six student-orderlies should follow next day. Colonel Cayley, one doctor, and the rest of the orderlies were to continue their journey by the *Pembroke Castle* to Port Elizabeth, with the equipment, and from that port travel direct to our destination. After a tedious, but not otherwise uncomfortable journey, we arrived at Bloemfontein and found we could get no farther. The line north of that town was still in a state more or less chaotic, and what was more serious, the Chief of Staff had given special instructions that transport was only to be arranged in the following order:—(1) Soldiers, (2) ammunition, (3) food, (4) siege train, (5) hospitals and medical stores. It was only with the utmost difficulty that Surgeon-General Wilson (the P.M.O. for South

Africa), who was at Bloemfontein, was able to get us sent on five days after our arrival—he himself, the Red Cross Commissioner (Lieut.-Colonel Ryerson), and two civilian surgeons (one of whom was the son of our old friend, Sir W. T. Gairdner) travelling with us. Our own nurses were left at Bloemfontein, but we took up ten nursing sisters belonging to No. 3 General Hospital, and also our six student-orderlies.

During our stay at Bloemfontein we visited the chief hospitals, and made ourselves acquainted with their working and the nature of the cases under treatment. We found that there were a large number of hospitals, for, in addition to No. 8 General and No. 9 General, there was No. 10 located in the upper and lower "Dames School" and Gray's College, No. 5 Stationary in the Raadzaal, the "Langman," the "Portland," the "Irish," the "Yeomanry Field Hospital," and, I think, one or two more. All of these were more or less overcrowded, and the cases were overwhelmingly cases of enteric fever. No. 9 (to give an example), originally intended for 520 beds, had 1,700 patients, not much over 100 of these being surgical. It was stated that there were more than 4,000 cases of sickness in and around Bloemfontein, but I cannot vouch for the accuracy of the figures. In one of the hospitals we saw two marquees (each used, as a rule, for eight beds), containing twenty patients each, lying on the ground, without mattresses, wrapped in their ordinary army blankets. These were, I gathered, "observation cases," and included some mild cases of dysentery, but whether there were any enterics among them I cannot say. At the same hospital I saw, outside enteric wards, the bedpans and urinals used by the patients not very well cleaned, and lying close to the door of the tent; and, beside them, rolled up, the dirty bedclothing, &c., removed, which had not been put direct into antiseptic fluid as it should have been. We found that many orderlies and nurses were laid up with enteric—the orderlies belonging to the Glasgow Medical Staff Corps at No. 10 General Hospital having been especially unfortunate in the amount of sickness among them. The whole of Bloemfontein was reeking with enteric, and I confess to having had no little apprehension as to the risk run by my colleagues and myself while we stayed in the capital of the Orange Free State, especially our student-orderlies, who lived at one of the hospitals, and our nurses, who worked assiduously among the enteric fever patients. We reached Kroonstad on 25th May, three days after Lord Roberts had left that town, so that we were fairly well to the front, in spite of my protest before we left Scotland that we

were going "to the rear." The state of matters we found at Kroonstad was necessarily much worse than what we found at Bloemfontein, for the condition of transport had rendered it impossible for any but field hospitals to get up, and these had, of course, to go on with the advancing troops. The staff of half a field hospital had been left behind, consisting of Major Ford, Major Macdonald, Captain Probyn, Civil-Surgeon Pears, and a small number of orderlies, most of them belonging to the Cape Bearer Company (a Volunteer organisation). The number of patients, Major Ford told me, was about 700, and these were lodged in buildings used temporarily as hospitals and in some military bell-tents. The first place we visited was the Grand Hotel, situated near the station, which Lord Roberts had taken possession of and converted into an hospital. There, we looked in at the billiard-room window, and saw patients lying as thick as they could lie on the billiard-table, on the settees, and on the floor, clad in their khaki uniforms, lying in their army blankets, with a very insufficient supply of pillows, no sheets, and few medicines or medical comforts. It is only fair to state that the Surgeon-General at once ordered the evacuation of the billiard-room, and the patients were removed that very morning to the Dutch Church, room being made for them by as many patients as could travel being sent to Bloemfontein by the carriages and trucks we had journeyed in from that town. From the "Grand" we went to the Dutch Church, the most prominent building in Kroonstad, situated in a large plot of ground in the centre of the main street. All the seats had been cleared out of the building—only the organ and pulpit remained to remind us of its proper use. There we saw a sight I shall never forget, for about 150 patients lay on the floor in their own clothes, mostly suffering from enteric fever, but with a good sprinkling of cases of dysentery. There was an undue proportion of severe cases, and we noted in many instances indications that the "angel of death" was not far off. All that could be done had been effected by the two medical men and the mere handful of orderlies, but there were (till we arrived) no nurses, milk was not easy to obtain, and both medicines and medical comforts were lamentably insufficient. In the large tree-planted space around the Church were a number of bell-tents, which served for less severe cases and for the orderlies. Near by was the Stadthuis or Town Hall, a small building, crowded with patients, many of whom lay on the stage and had behind them a gaudily painted scene representing a conservatory full of plants in flower. After



breakfast I went to the Kroonstad Hotel, a large and pleasantly situated building, which in times of peace served to lodge the jaded plutocrats of Johannesburg who came thither for a holiday, but was now used as a hospital. It had two courtyards (one of them laid out as a garden), around which ran single-storey buildings divided into bedrooms, many of which were of good size and well furnished. These were occupied by sick officers, most of them very bad indeed, and among them I was sorry to find Civil-Surgeon Alex. Robertson, of Glasgow, who had been there since 16th May suffering from a severe attack of enteric fever. A large, well-proportioned and airy ballroom had been converted into a general ward, and was crowded with patients, lying (with the exception of four) on the floor. This room was used as the Raadzaal by the Orange Free State Volksraad during the weeks when Kroonstad was the capital, and in the passage from the street to it I found posted a number of official Boer telegrams, a few of which I had taken down, and still have. Numerous smaller rooms were occupied by patients, and some of these, measuring only 10 feet by 8 feet, held eight patients, lying on the floor. Patients also lay in the smoke-room, the dining-room, and even the entrance-hall. Sanitation there was none, for all the drains from the hotel ran into the open "channel" at the side of the street, and the fluid was carried by it into the river, from which all the drinking water of the town and district was obtained. We soon put a stop to the river pollution. But while we got both fluids and solids removed several times daily by the town carts, and took care that they should be well disinfected with carbolic acid or "Izal," I was never satisfied with the mode in which the sewage was disposed of, for it was distributed on the town lands not more than a mile from the station. When floods came it would be all washed down into the river, but fortunately would enter it considerably below the dam which stored up the drinking water.

On the day after our arrival, General Wilson asked if I would take over these temporary hospitals and work them, as the staff of the Field Hospital were required to join their unit without delay. I readily agreed to take charge of one of them (leaving the others to the staff of No. 3 General Hospital when it arrived), and selected the Kroonstad Hotel for personal reasons you will well understand. The burden of that hospital remained on my shoulders till the end of June, and as, of the 130 patients I took over, only three were surgical cases, you will quite appreciate that, if my dreams of extensive



surgical work had been rudely dissipated, I had taken a wise resolve and determined to let nothing stand in the way of my doing my best to help the Army Medical Department and the patients in the trying circumstances. Mine was, however, mainly administrative work, and the actual treatment of patients rested with my able assistants, Dr. Cowan, Dr. Garrow, and Civil-Surgeon Watson.

Two days after our arrival at Kroonstad the equipment of the Scottish Hospital and the rest of the staff arrived, along with the staff and equipment of No. 3 General Hospital from Roodebosch, and from henceforth the condition of matters rapidly and continuously improved.

When the British entered Kroonstad they found there a Russian ambulance working a hospital in the secondary schools, and many of the patients were our own soldiers, including several officers of the Lancers and other regiments. It was well equipped and ably officered, and boasted of three efficient nurses, but the conditions as regards air and cleanliness left much to be desired. The equipment of the operating theatre, the acetylene lighting installation, and hand ambulances and mule ambulances were better than we could ourselves show. This hospital was worked alongside of our temporary ones, and was closed about the same time, one of the buildings being now occupied by the Boer prisoners.

This is, perhaps, a fitting time to discuss what you will no doubt expect me to do more than touch on, namely, the allegations made as to the defects in the arrangements of the Royal Army Medical Corps for the treatment of the sick and wounded—or, in other words, the "Hospital Scandal."

We have all well known that for some years past the R.A.M.C. has been understaffed with medical officers, even for the ordinary routine work of the service, and the heads of the Medical Department of the army have not been oblivious of that fact. Consequently, from a very early period in the war, they called for volunteers from among civilian surgeons throughout the empire. How that call was responded to you know, and it is the fact that when we left South Africa the number of civilian surgeons employed in the care of the sick and wounded exceeded those belonging to the regular service. No doubt a serious miscalculation was made at the outset of the war as to the number of troops that would be required, but for that miscalculation the Director-General and his subordinates were in no sense responsible, and it may be claimed for them that they never failed to send out with each division of the army the recognised equipment of field, stationary, and

base hospitals, with their full complement of doctors, nurses, and orderlies. The medical authorities did not anticipate, it is true, the terrible outbreak of enteric fever which, in the middle of April, converted Bloemfontein into one gigantic hospital camp, and the news of which sent a thrill of horror through the length and breadth of the empire. Even if they had anticipated it, I doubt if they could have done much in the way of preparation, for hospitals and their equipment, doctors, nurses, and orderlies, could not enter Bloemfontein until the town was occupied by the British. It is not, I assume, seriously contended that the General Hospitals with all their equipment (averaging a ton a bed) should have accompanied French on his lightning march to Kimberley, should have followed the army in the operations at Paardeberg, and should have taken part in the advance on Bloemfontein. On all hands this is admitted to have been impossible. We find, therefore, the army occupying Bloemfontein, with a large and constantly increasing number of cases of enteric fever, and with none but field hospitals for their treatment. Enteric fever, never absent from the towns of South Africa, was here accentuated by the long and exhausting marches, the night bivouacs, the scant food, and the heavy fighting of that time of victories; above all, it had been spread by the men drinking of the water of the Modder River, so polluted by man and beast—living and dead—as to be little better than liquid sewage. The first demand of the army of occupation was for food, ammunition, clothing, remounts, and guns, and all these must, from the military necessities of the case, precede hospitals, doctors, and nurses. The single line of narrow-gauge railway—stretching its slender streak for nearly six hundred miles from the main base at Cape Town—was broken in many places by bridges being blown up, culverts destroyed, and permanent way damaged. Nor must it be forgotten that the country to the south of Bloemfontein, through which the railway passes, was still in the occupation of the enemy for a fortnight after that town was taken. Even when they were driven off, the great bridge at Norval's Pont was so damaged that for a time goods and men had to be ferried across from bank to bank. Amid such difficulties as to transport the medical staff had worked, and when things were at length looking brighter, and it was beginning to be possible to look after the treatment of patients, instead of only making up the necessary papers recording their admission and dismissal, came the crowning misfortune in the disaster at Sanna's Post, resulting in the cutting off of the water derived from the reservoir. It was necessary to fall

back upon the wells in and around Bloemfontein, at all times suspect, and now more polluted than ever. No one can honestly withhold from General Wilson and his subordinates high praise for all they accomplished under such trying conditions. They themselves readily admit that many things were not as they would have wished them to be, but the fault did not lie with them; they could only do their best in the circumstances in which they were placed, and all who have been in touch with them can bear testimony to their tireless energy and self-devotion. The fault did not lie with the Medical Department of the War Office, nor with the Secretary of State for War or the permanent officials of his department, nor with the Government in power—but it depended on the fact that *war is war*, and cannot be carried on without distress and suffering on the part of the whole army, in which sick and wounded necessarily participate. General Wilson humorously observed to me that nothing would satisfy his critics but that the General Hospitals should be sent up to the enemy's towns, and get into working order *before our troops advanced on those towns!* If we follow out this suggestion, we must imagine a General sending to the leader of the opposite army intimating his intention to take a town at a certain date, and requesting that hospitals and their staffs may be accorded a fitting reception ten days before that date. I fear our civilisation is not yet sufficiently advanced for the speedy advent of such a consummation, but who can tell what the twentieth century may bring forth?

I shall, no doubt, be reminded that many of the charges related to the base hospitals in the neighbourhood of Cape Town, where the difficulties I have dwelt on did not exist. That is true; but it is precisely these very charges which have notoriously broken down. It will be found when the Report of the Hospital Commission is issued that the hospitals at Wynberg, Rondebosch, and Woodstock, are cleared of the aspersions which have been cast at them, and that the work they have accomplished was great in amount and excellent in quality.

Our camp hospital was located on a portion of the town lands of Kroonstad, sloping up from the residences at the back of the station towards the supply reservoir, and the main water pipe passed through the camp. We were thus able to get a copious supply of the purest water which the district could furnish. The river Valsch, like the majority of South African rivers, runs in a deep and wide gorge, and varies (below the town) from a mere trickle of water to a deep, wide, and raging

torrent, according as it is the season of drought or of rain. Immediately above the drift, however, a large and well-constructed dam has been made, having for its base the solid rock which firms the bed of the river, and this dam keeps up the water, and forms a smooth, wide, and fairly-deep river for about four miles, admirable for boating and giving some sport for fishers, and never giving out even in the longest drought. On its banks near the town are some of the finest willows I have ever seen, and the four miles of stored water has its banks clothed with mimosa bushes, and many varieties of trees, which make it in the summer months a really beautiful river, and a daily resort for pleasure-seekers. Even in times of peace it is never free from pollution, for the banks are so steep that horses, sheep, or cattle, coming down to drink often fall in, and, being unable to get out again, lie and rot in the stream. This cause of pollution has been increased ten-fold during the war by the heavy mortality among the army horses, and their decaying carcasses lay in the dongas and spruits running down to the river, and every shower of rain washed decomposing matter into the stream. The water was consequently of a yellow colour, and at sundown the odour from the dongas and the river was something we shall never forget. When the Government bacteriologists were with us they found the water taken from the river to contain *B. typhosus*, and, further, found the *B. coli communis* plentiful both in the river and in the water of the supply reservoir, although the latter had passed through two filter-tanks.

In the centre of our camp was a large square brick tower, around which our tents were grouped, and it was not till after we had got settled down that we found this to be used for the storage of dynamite for mining purposes. The first days of June found us in a state of scare, for information had been received that the enemy was only about 12 miles distant, and was making for Kroonstad. At that time the town was almost defenceless, but we had the "Paisley Militia" for our guard regiment, and their reputation is well known. The officers of that regiment, fortunately, were able to take possession of some cannon which were passing through the station, and planted them at the top of the hill above the reservoir, and consequently at the rear of our camp. As it was evident that if we were attacked these guns would draw the fire of the enemy, and both our own hospital and No. 3 General (about half a mile away) would inevitably suffer, General C. Knox—who came up in command of reinforcements from Bloemfontein—wished the hospitals to be moved. *Our*



only fear was that a Boer shell might lodge in the dynamite magazine, and the career of the Scottish Hospital be summarily cut short. We succeeded in getting the dynamite removed to another store a mile or so across the veldt, and thereafter we decided to remain where we were, and run our risks. With No. 3 General Hospital the scare eventuated in a wide and deep donga being converted by the Engineers into an excellent bomb-proof shelter, into which (if the town was attacked) the patients could be carried.

Colonel Cayley, with most of the orderlies and the equipment of the Scottish Hospital, had arrived at Kroonstad on 27th May, and on 3rd June our tents were all up and our camp sufficiently organised to receive patients. So that, despite the fact that we had had to remove everything from the camping ground close to No. 3 General Hospital to the site we finally occupied, we had got up our hospital equipped and ready for a hundred patients in exactly a week—forty-four days from the date of our leaving Glasgow. For a few days patients came in slowly, but on 7th June we received a convoy of sick and wounded from Lindley. It was a weird scene to see the sinuous line of bullock-teams and waggons, winding across the veldt to our camp, and showing ghostly in the sparse illumination of an early moon in a cloudy sky. From thenceforth there was no lack of patients and there was plenty of work. Surgical cases, if not excessively numerous, were, for the most part, interesting. We had heard before we left home a good deal about the kindness and gentleness of the Mauser bullets, and about the antiseptic atmosphere which was supposed to account for the rapid healing of wounds. Believe me, there is no antiseptic atmosphere in South Africa. The air during nearly the whole of our visit was exceedingly dry, and so far was unfavourable to the rapid multiplication of micro-organisms, but dust was ever present with us, stirred up by the cavalry, infantry, artillery, and the long trains of convoy bullock-waggons. It permeated our tents, mixed with our food and drink, got into our trunks and portmanteaux, got up our noses and into our ears. We found it practically impossible to get water free from dust for operative purposes, and that dust was made up in no small part of the dried excrement of animals and even of man. A very large proportion of cases we got were septic when they reached us, and this was especially the case with shell wounds; indeed, one of the latter, which implicated the knee-joint and required amputation, was more freely suppurative than any case I have seen for many years past. Out of a convoy of about



forty surgical cases not more than five would have quite clean wounds, and these were commonly those which had been left untouched. Considering the conditions under which the Field Hospitals worked this is not to be wondered at, for they were often unable to get water at all to wash the wounds with, and when they could get it the water was generally highly polluted. I cast no reflections on the field hospitals, for whose really magnificent work I have nothing but admiration—my aim is simply to show that the theory of the “beneficent antiseptic air” has, in our experience, no justification. The secret of the rapid healing of so many of the Mauser bullet-wounds lies in the small size of the bullet and the high velocity at which it travels, and the consequent great penetrating power it possesses. Many of the examples of through and through bullet-wounds we met with were indeed remarkable, and I will give details of some of them:—

1. Lieutenant E., 44th Imperial Yeomanry. Mauser bullet-wound of left arm. Bullet entered at  $2\frac{1}{2}$  inches below external condyle of humerus in front, and had exit 1 inch above and behind internal condyle, passing in front of elbow-joint, and yet we had no evidence of injury either to vessels or nerves.

2. A private of the Imperial Yeomanry, who consulted Mr. Luke, had been shot in the pelvis while sitting on his horse. Bullet entered right thigh below trochanter major and emerged at left side of pelvis at the back, having apparently passed right across pelvic cavity without injuring any of its contents.

3. A private of the 10th Imperial Yeomanry had a bullet-wound of the right knee, wound of entrance being at outer side of external condyle of femur, that of exit near the centre of patella. It had thus passed obliquely through the knee-joint, yet beyond a little fluid in the cavity and slight limitation of flexion there was no evidence of interference with it.

4. Lieutenant A. W., 1st Bombay Lancers (wounded between Bethlehem and Lindley on 3rd July). Mauser bullet entered at right side of back, passing through shaft of eleventh rib, then traversed the liver, and emerged through the seventh intercostal space a little internal to the nipple line. From the course taken we believed that it passed through the upper part of the stomach, and we got stomach percussion note all round the wound of exit. It may, however, have passed between that organ and the abdominal wall, in which case it would perforate the edge of the diaphragm. At the time of the injury he had not taken food for several hours. He had been kept rigidly on milk diet while at Lindley, and we found

ourselves obliged to proceed very cautiously as to dietary, for even extract of meat or chicken-tea when administered caused pain. By a long rest in bed and careful dietary he made an excellent recovery. The wounds were both healed when he reached our hospital eleven days after he was wounded. He was seen in London twelve days ago (18th November), and was then in good health, and able to take all kinds of food.

5. The most remarkable case of all was that of Lieutenant H. E., V.-S. of the Irish Yeomanry, and I give the particulars as they figure in my journal report:—Wounded at Lindley on 31st May with a Mauser bullet, supposed to be fired at a distance of 800 or 900 yards. Wound of *entrance* in front of chest at centre of sternum, opposite fifth intercostal space; *exit* at posterior edge of left deltoid muscle. How this bullet escaped his heart is one of the numerous anatomical puzzles of this war. The shot rendered him momentarily unconscious. He had no spitting of blood, but had a momentary sensation of choking. Below the left axilla there was an area of ecchymosis, evidently due to the bullet in its course wounding a vein in the lower part of the axillary cavity. The wound of entrance had all the appearance of going through the sternum, and there was no mark of the course of the bullet on the outside of the chest, where the tissues were very thin and should certainly have shown evidences of the track. If the bullet was a spent one, it might have followed the curve of the chest wall, but in that case I do not see how it would have force enough to carry it through the shoulder, and make a clean sharp exit wound. He was quite clear that the distance from which the Boers were firing was from 800 to 900 yards, and at such a distance a Mauser bullet would go through everything. Did the heart escape? It is quite possible that the bullet went through it, for death would not necessarily follow.

“Hairbreadth escapes” were no doubt numerous throughout the war, but I shall only chronicle one which, it seems to me, should not be left unrecorded. A lieutenant of the ill-fated “Sherwood Foresters” saw a comrade struck down by a wound in the abdomen, and at once took up the wounded man to carry him out of the line of fire. He had picked him up off the ground and carried him a few steps, when he was himself struck by a bullet, which passed in through the ala of the nose of one side and out at the other, and then entered the head of the man he was carrying and caused instantaneous death!

Wounds of the chest were not uncommon, and in one convoy from Lindley I got four cases of perforating wounds of

the lung into the wards under my immediate care. In one of these the bullet had entered half an inch below and a little outside the inferior angle of scapula, and after traversing the lung had passed through the clavicle of the same side. There was no hæmothorax, but slight condensation around the wound of entrance. In a second, the bullet entered through the third intercostal space in front, and escaped at the posterior edge of the scapula, and here again there was no hæmothorax, but in the other two cases there was blood in the pleural cavity, and in one of them so much that the heart was displaced and the respiration much impeded. This I treated by aspiration—about 60 oz. of blood being removed—and the patient made an excellent recovery. Mr. Luke treated a similar case (a Basuto “boy”) by open operation, as in empyema, with good success.

Mr. Luke’s case of resection of bowel for gun-shot wound, I trust he will publish particulars of himself. It is, as far as I am aware, one of two successful cases during the whole of the war, the other one having been operated on in Natal.

We had three cases of trephining for bullet-wounds of the skull—one performed by Mr. Luke, one by Dr. Stirling, and the third by myself. In the case under my care the patient, when admitted to the hospital, had absolutely complete paralysis (both sensory and motor) of the left arm, and left facial paralysis, due to a wound in the arm and face areas, and the bullet was supposed to be still in the skull. On removing a large disc of bone, I found a cavity in the brain commencing to suppurate, but no trace of the bullet. I introduced my little finger, and with it explored the brain in all directions, but without result. Carefully clearing out all septic material, the cavity was lightly packed with iodoform gauze, which was removed on the sixth day. He improved very rapidly, and a month after the operation it was recorded that it was quite impossible, with the most careful observation, to distinguish any defect either in the face or arm.

One other brain case should be briefly mentioned. It is that of Captain A., of the Cameron Highlanders’ Mounted Infantry, who was wounded at or near Vredefort. The bullet entered the right side of the head at the parietal eminence, and emerged at the left side nearly at the same point, but a little nearer the middle line, traversing therefore the upper part of both hemispheres of the brain. He was completely blind for eight days, but on the eighth day could faintly distinguish a lighted match. Trephining was performed by Dr. Osborne, the local practitioner

at Vredefort, before the eighth day, and when patient was admitted to our hospital the wounds were quite healed. He could then read No. 2 Jaeger at 12 inches, but when he tried the second line got from it into the first, and so mixed them up. When walking about the grounds and the town of Kroonstad, he could not find his way, but required some one to walk with him. But the most marked defect was that he had *horizontal hemiopia*, the upper half of the field being entirely blind, excepting a little on the left side with the left eye. In the right eye the line of separation between the seeing and blind parts was a straight horizontal line, and was drawn a little above the true horizontal meridian of the eye. I showed this patient to Professor D. J. Cunningham, when the Hospitals Commission was with us, and he was much interested in it as agreeing with the distribution of the fibres of the optic radiations. As these radiations are generally regarded as passing to the cuneate lobe, it appears to me that the track of the bullet must have been at least an inch above their course. Captain A. was one of the patients who came home in the s.s. *Trojan*, and I thus was able to make a further study of his case. He had made very considerable progress, and was able to read a book with fair comfort and ease, but his hemiopia still continued.

To give details of many of our cases would be both tedious and uninteresting, but I must speak of two cases of traumatic aneurysm, which present points of unusual interest. The first is a case of traumatic aneurysm of the profunda femoris artery:—

Captain M. W., 1st Royal Irish, wounded with a Mauser bullet, near Lindley, on 20th May. Wound of *entrance* about 4 inches below Poupart's ligament of right side, and a little external to line of superficial femoral artery; *exit* at back of thigh a little external to gluteal fold. The bullet had passed on the inside of the femur, and had not touched that bone. The wounds healed in the course of a few days, but a traumatic aneurysm formed, for which nothing was done but keeping him at rest in bed. He stated that by the 4th June the swelling had considerably diminished in size. He was seen on that date by Dr. Mason, who reported to me that there was then a distinct thrill in the tumour, suggestive of an arterio-venous connection. About 10th June, he was allowed to sit up in a chair, when renewed hæmorrhage took place into the tissues, and this obscured the thrill. He was brought over from Lindley, and admitted into the Scottish Hospital on 3rd July. On that date I made the following note:—"Girth of limb at level of wound of entrance, 24½ inches; left leg, 18 inches. Swelling



is firm and non-fluctuant; there is almost no pulsation, and no evident thrill. Pulse in posterior tibial at ankle good. No cedema of leg. Aneurysmal bruit very distinct with stethoscope." It was decided to keep him at rest in bed, and to administer iodide of potassium, and see what amount of absorption took place. On the 11th July, it was recorded that the girth of the limb had diminished an inch, but that pulsation could now be distinctly felt. On the 12th, 13th, and 17th, the temperature rose to  $101^{\circ}$  F., and on each occasion an increase in the size of the tumour was noted. Professor Chiene saw the case with me when he was in Kroonstad, but would only say that the last case of that kind he saw turned out to be an abscess. In spite of this cryptic saying, I think he agreed with me as to the real nature of the tumour. Patient was kept longer under observation than I intended, in consequence of my having a localised paraonychia of the index finger of left hand, which was troublesome to get healed. On 6th August, the journal says, "Since last report there has been no definite improvement in the local condition, for while there has been some absorption at the outer side of the mass, there has been considerable increase posteriorly, so that the girth of the limb has been increased rather than diminished. Operation is therefore decided on, and patient agrees."

"7th August.—Operation performed this morning under chloroform administered by Dr. Graves. A long incision was made near the inner border of the front of the thigh, exposing the adductors longus and magnus, and, on separating the fibres of the latter, the false sac of the aneurysm was reached and incised. The hæmorrhage was controlled by Mr Luke compressing the abdominal aorta with his closed fist. A large mass of clot was removed, and fluid blood welled up freely from the cavity. After clearing out the cavity, it was firmly packed with gauze, and a second incision made at the outer side of the line of the superficial femoral artery. On reaching the outer limit of the aneurysmal sac, it was found that the vessels leading into it were much damaged, and their walls friable, so that it was difficult to get a ligature to hold. The wounded artery was the main trunk of the profunda, close to its origin from the common femoral. In front, and in close relation to it, ran the superficial femoral artery, and its connection with the aneurysm was so intimate that it was at one time feared it would be necessary to ligature it. Fortunately, it was found possible to avoid this, and what seemed satisfactory ligature of the profunda was accomplished. The cavity was then packed with iodoform gauze. The operation lasted nearly two hours,



and at the end of it the patient was almost pulseless. He was kept in a bed in the operating theatre, and by evening had rallied well. His temperature after operation was 96°, but in the evening it rose to 99° F." He made an excellent recovery, in spite of some suppuration taking place in the cavity. On 20th August the long inner wound was stitched up, and the outer wound packed and left to heal by granulation. When we left Kroonstad, on 20th September, I brought my patient away with me, and he remained under my care till we landed from the s.s. *Trojan* at Plymouth. The outer wound was completely healed about a week before we reached England. I have heard from him twice since our arrival, and gather that he is making good progress, though it will be some time before the muscles of the thigh become sufficiently stretched to allow of the leg being straightened at the knee.

The other case of traumatic aneurysm was even more interesting, although not so fortunate, for we did not manage to pull him through the terrible operation I found necessary. The patient was a young German law student who had volunteered to join the Boers out of love of adventure, and being wounded at Lindley was brought in to our hospital with the convoy from that place, and figured in our official lists as a prisoner. He was under the care of Dr. George Hodge, and as that gentleman has remained at the hospital at Elandsfontein, near Johannesburg, I have to give the details of the case from memory, for Dr. Hodge has the report of the case. The patient was struck by a bullet (presumably a Lee-Netford) in the middle line of the neck, over the upper part of the trachea. It passed to the right across the common carotid artery and evidently took away a portion of the anterior wall. The wound of exit was at the back of the scapula, the bullet having passed through the thin bone of the infra-spinous fossa. The wound of entrance was very small and was soundly healed, that of exit was discharging pus, and a few days after his admission it was found necessary to enlarge and pack this opening. In the posterior triangle was a swelling, the nature of which we did not at first appreciate, and it was neither definitely fluctuant nor pulsatile. A careful examination of it convinced me that it was aneurysmal, and this judgment was arrived at mainly because it was continuous with a swelling in the line of the common carotid, and that the latter was clearly an aneurysm. As the swelling was daily growing larger, and I feared a rupture into the pleura, it was decided that an operation should be performed.

The anæsthetic was most carefully administered by Dr. Hodge, and there was no complication in its exhibition, excepting when I on one or two occasions made traction on the vagus. An incision was made along the anterior edge of the sterno-mastoid, and it was at once apparent that the tumour extended so far down the neck that it would be difficult, if not impossible, to reach its lower limit. I therefore applied a ligature on the carotid on the distal side of the aneurysm, in the hope that I might be able to follow down on the posterior surface of the tumour. In this attempt I failed, as the wall of the aneurysm was so thin as to discourage traction or manipulation, and was so inseparable from the fasciæ of the neck that it could not be dissected out. The next step was to divide the sterno-mastoid across and turn the divided ends upwards and downwards. The internal jugular vein was now seen to be lying in close relation to the tumour, and it was found necessary to ligature it in two places, divide between them, and dissect it off. Still I could not reach the lower limit of the tumour, and it was decided to resect the sternal half of the clavicle, which was done subperiosteally. In doing this I accidentally punctured the subclavian vein, or tore across a small vein entering it, and this caused us much trouble. At length I was able to get my finger down to the innominate artery, and place an aneurysm needle behind it, but while engaged in this manœuvre my fingers ruptured the delicate lower wall of the sac, and free hæmorrhage ensued, which could only be controlled by the fingers plugging the opening. My ligature was duly passed round the innominate artery and secured, but still the bleeding went on. After several attempts to stop it had failed, we discovered that it was the large aneurysmal sac which was emptying; it must have contained more than a pint of blood. With my fingers in the sac I could feel a fracture of the first rib near its tubercle, where the bullet had passed out to the back, and below, the lung seemed in immediate contact with the fingers. The operation had lasted more than three hours, and the patient's condition was critical. When the sac was emptied of the blood the hæmorrhage ceased, and we were able to complete the operation by stitching up the wounds. It was by far the most trying operation it has ever fallen to my lot to perform, and I have especially to thank Mr. Luke for his very valuable aid. I could wish for no better assistant in a trying emergency. The lad was put into a bed in the operating theatre and soon regained consciousness, but only to expire within an hour of the completion of the operation.

The *post-mortem* examination, which was held next morning, revealed nothing new; the innominate was properly ligatured and the aneurysmal sac emptied. We found that on the pleural aspect the sac was so thin that it must inevitably have ruptured in the course of a few days.

Other interesting cases we had, but time will not permit of a reference to them.

The number of cases treated in our camp hospital from the time of its commencing work till 14th October, when it was handed over to the Government, was—Officers, 74; non-commissioned officers and men, 908; civilians, 70; total, 1,052—and if we add the 130 treated at the Kroonstad Hotel we have a grand total of 1,182. The records at the hotel were so imperfectly kept that I can make no use of them for statistical purposes. Excluding these, the mortality over all the cases under our care was 1·71 per cent. The surgical cases numbered 427, with a mortality of 1·4 per cent. No conclusions can be based on the low mortality thus shown, for many of the cases received from Lindley were convalescent when they were sent from there, and on one occasion a party of Cameron Highlanders who were sent up by train to go to the Rest Camp made a “bee-line” instead to the Scottish Hospital, where they knew they would get comfortable beds and good food.

The health of the staff of the hospital was for the most part excellent, and the first contingent (that, namely, with which I went out) had practically no illness among them, so that we returned home in the best of health and without a break in our circle. On our way out we had been inoculated with anti-typhoid serum obtained direct from Professor Wright, and Colonel Cayley personally superintended the operation. With one or two exceptions, we were all inoculated twice, and the fact that—although we were at Bloemfontein at the height of the epidemic and our nurses worked in the hospitals there, and again at Kroonstad found the disease very active—none of us took enteric, seems to me fairly conclusive as to the protection secured by the inoculation. Our second contingent was less fortunate than we were, for although during the time of their stay in South Africa enteric was less prevalent than in our early days, five of them took the disease and two died. Of the latter, one had been inoculated once, the other not at all. The difference between the protection secured from inoculation by the two contingents was brought out in another and very interesting way. Two bacteriologists (Drs. Dodgson and Collingwood) were sent out

by the Government to investigate and report on inoculation for enteric; they spent about a fortnight at Kroonstad at the end of August, and were much interested in the evidence of our two contingents, for we were living under exactly the same conditions and running the same risks. The test they applied was the amount of dilution the blood serum would stand and still give Widals reaction. Of the first contingent, 23 were tested and *all* reacted. 2 gave poor reactions (1 in 20); 12, good (1-40); 7, very good (1-80); 1, unusually good (1-160); 1, extraordinary (1-500). Of the second contingent, 22 were tested. 11 gave no reaction; 8 gave a very questionable reaction; 1, poor reaction (1-20); 1, good; 1, very good. Yet the second contingent was inoculated a month later than the first. The only explanation we could find or suggest, was that the first contingent was inoculated with serum prepared less than a month before being used, while that used for the second contingent had been on the vessel since the beginning of the year. We are generally told that serums of this kind will keep for a year or more without change, but our experience seems to suggest that this statement may prove to be erroneous.

We found living in tents rather trying at first, when the nights were very cold, but soon got accustomed to it, and then enjoyed thoroughly the free out of door life. The cloudless skies and warm sun were charming, and, as we were fully 4,500 feet above sea level, the air was never oppressive. I met with several men who had been obliged to leave the old country because of pulmonary troubles, and who were in robust health. Indeed, I can imagine no more delightful and invigorating climate than that of the high veldt. If only there were no dust-storms, and if we could ensure unpolluted water to drink!

Of the war itself—of the trials and sufferings of our troops, of victories and defeats, of the right conduct of military operations, and of the future of the two small states with which we have been at war—this is neither the time nor the place to speak.

Sufficient for us that we have been out and performed the duty entrusted to us, and returned safe and sound, with a wider knowledge of the world and a broader and deeper experience of war and all that it entails. If we have accomplished nothing great, we are, at least, happy in the knowledge that, in a land which has been described as the "graveyard of reputations," we have maintained the honour and credit of "old Scotland."



## MEETING VI.—7TH DECEMBER, 1900.

DR. R. BARCLAY NESS *in the Chair.*I.—THREE CASES OF DOUBLE CONGENITAL PTOSIS OCCURRING  
IN FATHER AND TWO DAUGHTERS.

BY DR. J. KERR LOVE.

Dr. Love showed two cases of double ptosis occurring in father and daughter in a family in which a third case also existed—that of a baby girl born only a few weeks ago. In all three cases the ptosis was complete. The only remaining member of the family was a boy, but he was free from the defect. Dr. Love operated on the father by removing a strip of skin about an inch long and half an inch broad from the upper eyelid, and stitching the edges of the wound. A striking photograph was shown, in which one eye is seen with the defect, and the other with the defect removed by operation. The patient himself was shown with both eyes treated. There was no mark of the incisions, the lids were under the control of the frontalis muscle, and could be further raised as if in surprise. They could be perfectly closed. No watering of the eyes or other troublesome symptom followed the operation. The operation was done without an anæsthetic, and in the case of each eye occupied only a few minutes.

*Dr. Andrew Wilson* said the cases of congenital ptosis which Dr. Love has brought before us to-night are very marked examples of a condition which we oftener see in a less pronounced form. Most authors are agreed on the point that congenital ptosis is more commonly met with in the female members of a family, although this is by no means always so. Generally, congenital ptosis does not occur as an isolated muscular lesion, but is associated with defective development or absence of some of the purely ocular muscles, specially the superior recti. *Hirschberg* relates the case of an adult male who had congenital double ptosis and paralysis of all the ocular muscles, incomplete in the superior oblique and the internal muscles, whose mother presented a similar condition, while his son had congenital double ptosis and paralysis of the superior recti. Most methods of treatment aim at raising the lid by increasing the effect of the occipito-frontalis



muscle, but, unfortunately, these operations leave very marked cicatrices. Resection and advancement of the levator palpebræ tendon, or in paralysis of the levator palpebræ, the superior rectus, have also been advocated. The result in Dr. Love's case is to be entirely attributed to the shortening of the lid by the excision of a fold of skin; there is no levator action proper, any power the patient has of raising the lids being entirely due to the action of the occipito-frontalis.

## II.—TUBERCULAR DISEASE OF THE HIP-JOINT.

BY DR. J. GRANT ANDREW.

This investigation was undertaken principally to obtain facts bearing on the treatment of tubercular disease of the hip-joint as it is carried out in a general infirmary; to prove that, under present conditions of hospital management, a line of treatment was and is carried out which is necessarily much more radical than that in private practice; and to plead, if the facts bore out the contention, for the founding of a special hospital for hip-joint disease.

The inquiry took the form of an examination of all cases of hip-joint disease treated in the wards of Mr. Maylard at the Victoria Infirmary, Glasgow, during the past ten years.

For that period the writer has been closely associated with Mr. Maylard in the work of the infirmary, and thus has an intimate acquaintance with all of the cases examined. In addition to this, Mr. Maylard has for the past two or three years generously entrusted him with the entire treatment of all such cases.

To trace any group of cases after they leave the infirmary is no easy matter, for the class of people from which our patients are largely drawn seldom remain more than a year in the same house, removing, in many instances, only a few doors farther up or farther down the street. In spite of this fact, we have been able to trace 60 out of the 70 cases. Excluding the 10 of which no trace could be found, 19 out of the remaining 60 had changed their address—nearly a third. I may here mention that I am greatly indebted to Dr. T. M. Strang, late resident assistant at the infirmary, for his able assistance in following up these cases, and for his help in procuring the information wanted.

From the surroundings of these people, penned up in narrow ill-ventilated streets; from the size of the apartments, in many instances a one-roomed house; from the abject poverty, the filth, and the intemperate habits of the parents, it is impossible to

get that prolonged care for the children which is absolutely necessary in the early treatment of this condition.

We get them, consequently, at our general infirmaries in one of two conditions—either at the early stage with some slight fixation of the joint, or at the late stage with complete disorganisation, and more than likely with abscess or several sinuses.

Our infirmary directors, or, perhaps, we ourselves, are largely to blame for this state of things; for in the early stage of hip disease, after a month or six weeks' residence, we send out our patients, vastly improved no doubt, but with the absolute assurance that they will return to us later with the joint in a state of complete disorganisation. This is not as it should be.

What we want and what we need is a special hospital for the treatment of hip-joint disease in children on the lines of the Alexandra Hip Hospital in London, where only such cases are admitted, and where there is no limit to the length of residence.

Under our present circumstances we are forced to adopt operative measures, with the knowledge that such involves considerable mutilation in order to shorten the period of residence in the hospital and to hasten the time when the patient will be in a condition to move about, and require less attention at his own home.

We do not claim that our results are any better than the results got in any other general infirmary, nor do we think they are any worse. Our sole object in drawing attention to this subject is to aim at securing the best possible results for this as for every other class of case.

The information obtained is arranged for convenience in tabular form. There are six tables.

No. I gives the name and address, age on admission, age at present, sex.

No. II, the date of admission, date of dismissal, length of time in hospital, hip involved.

No. III, duration of disease prior to admission, nature of treatment (if any), condition on admission.

No. IV, whether operated upon and nature, situation of the disease, extent of bone removed.

No. V, condition on dismissal, condition at present, length of time since dismissal.

No. VI, amount of shortening, how corrected; if dead, cause. These points are taken up separately.

*District.*—The great majority of the cases (61) came from

the neighbourhood of the infirmary—within a radius of five miles; 19 were from the immediate neighbourhood; 9 from the outlying country districts (Table No. I).

With very few exceptions the home conditions were such as to necessitate removal somewhere, as there were no facilities for prolonged rest and nursing.

*Age.*—Taking all cases, the average age on admission was 11. More than half of the cases, however, were in children under the age of 10; taking these alone the average age was 6.

This latter agrees with the statement of Howard Marsh (*Diseases of the Joints*, p. 105)—“That a very large proportion of the cases admitted into the Hospital for Sick Children, and the Alexandra Hospital, with hip disease have been attacked before they were 6. The most common period of all is between the ages of 3 and 5.”

If the average duration of the disease before admission (Table III) be deducted, the average age of onset in our cases very nearly corresponds to that mentioned by Mr. Marsh.

Those of a more advanced age on admission not infrequently had symptoms at an earlier age, but with treatment remained quiescent until some further injury, or a condition of lowered vitality precipitated a recurrence of the disease in its more acute form.

*Sex.*—The greater proportion of our cases were males, the proportion being 48 males, 22 females. Nothing can be deducted, however, from this proportion, as for some time after the opening of the infirmary only male cases were admitted to these wards (Table No. I).

*Length of time in hospital.*—This presents the greatest variety, the period of residence varying from 2 days to one of 338 days on a single admission.

Regarding every admission as a unit of admission gives a total of 92 admissions for 70 cases, and an average residence of 118 days. Eighteen cases were twice admitted, and two cases three times admitted.

If we add together the number of days spent in the hospital of each case, we find the average length of time to be about 150 days.

There is here a strange coincidence. At the Alexandra Hip Hospital, of which more later, where excision is never performed, the average duration of admission is exactly the same, five months—an argument in favour of less heroic measures.

In our cases the average length of time under treatment when no operation was performed was 43 days; when abscess

TABLE No. I.  
NAME AND ADDRESS—AGE ON ADMISSION—AGE AT PRESENT—SEX.

No.	NAME AND ADDRESS.	AGE ON ADMISSION.	AGE AT PRESENT.	SEX.
1	W. J., Glasgow, S., ...	13 years,	23 years,	M.
2	J. B., Glasgow, S., ...	9 "	19 "	M.
3	W. R., Glasgow, S., ...	14 "	Not found,	M.
4	J. L., Pollokshaws, ...	19 "	28 years,	M.
5	J. S., Carlisle, ...	10 "	19 "	M.
6	A. G., Glasgow, S., ...	11 "	20 "	M.
7	W. H., Glasgow, E., ...	10 "	19 "	M.
8	W. M., Glasgow, S., ...	13 "	Died, æt. 15,	M.
9	J. C., Glasgow, S., ...	7 "	15 years,	M.
10	T. H., Glasgow, S., ...	14 "	Died, æt. 16,	M.
11	J. M'G., Glasgow, S., ...	28 "	Not found,	M.
12	J. H., Govan, ...	9 "	16 years,	M.
13	J. V., Glasgow, S., ...	17 "	Not found,	M.
14	W. I., Busby, ...	8 "	Died, æt. 8,	M.
15	C. S., Glasgow, S., ...	16 "	23 years,	M.
16	M. I., Plantation, Govan,	11 "	18 "	M.
17	M. D., Govan, ...	13 "	20 "	M.
18	J. T., Glasgow, S., ...	10 "	Died, æt. unknown,	M.
19	G. A., Glasgow, S., ...	6 "	Not found,	M.
20	J. R., Pollokshaws, ...	44 "	Not found,	M.
21	R. M., Glasgow, C., ...	19 "	Died, æt. 19,	M.
22	R. G., Glasgow, S., ...	13 "	Died, æt. 13,	M.
23	J. L., Glasgow, S., ...	5½ "	Not found,	M.
24	M. M'K., Glasgow, S., ...	31 "	Not found,	M.
25	M. R., Glasgow, S., ...	9 "	Died, æt. 9,	F.
26	H. M'L., Glasgow, S., ...	15 "	21 years,	M.
27	J. P., Glasgow, S., ...	13 "	19 "	M.
28	S. J., Govan, ...	9 "	15 "	M.
29	A. F., Balfon, ...	13 "	Not found,	F.
30	R. M'D., Glasgow, S., ...	2 "	Not found,	M.
31	G. W., Fauldhouse, ...	24 "	Not found,	M.
32	I. R., Glasgow, S., ...	11 "	17 years,	M.





TABLE No. II.  
DATE OF ADMISSION—DATE OF DISMISSION—LENGTH OF TIME IN HOSPITAL—  
HIP INVOLVED.

No.	DATE OF ADMISSION.	DATE OF DISMISSION.	LENGTH OF TIME IN HOSPITAL.	HIP INVOLVED.
1	{ 1-27th June, 1890, ... 2-1st November, 1892, ...	19th July, 1890, ...	22 days, }	Right.
2	2nd October, 1890, ...	17th February, 1893, ...	109 "	Right.
3	14th January, 1891, ...	1st May, 1891, ...	210 "	Right.
4	4th March, 1891, ...	26th February, 1891, ...	43 "	Right.
5	10th June, 1891, ...	14th March, 1891, ...	10 "	Left.
6	26th June, 1891, ...	16th October, 1891, ...	128 "	Left.
7	29th September, 1891, ...	25th September, 1891, ...	91 "	Left.
8	{ 1-28th November, 1891, ... 2-2nd May, 1892, ...	25th June, 1892, ...	269 "	Left.
9	20th January, 1892, ...	20th January, 1892, ...	53 "	Right.
10	{ 1-5th March, 1891, ... 2-1st February, 1892, ...	4th May, 1892, ...	2 "	Right.
11	14th February, 1892, ...	28th May, 1892, ...	128 "	Left.
12	15th June, 1893, ...	7th March, 1891, ...	2 "	Left.
13	7th June, 1893, ...	23rd February, 1892, ...	24 "	Right.
14	20th May, 1893, ...	21st November, 1893, ...	9 "	Right.
15	{ 1-27th April, 1893, ... 2-4th October, 1897, ...	12th June, 1894, ...	360 "	Left.
16	28th March, 1893, ...	24th September, 1893, ...	127 "	Left.
17	{ 1-13th March, 1893, ... 2-30th April, 1896, ...	10th August, 1893, ...	105 "	Right.
18	7th March, 1893, ...	2nd February, 1898, ...	121 "	Left.
19	4th March, 1893, ...	14th November, 1893, ...	231 "	Left.
20	21st January, 1893, ...	6th May, 1893, ...	54 "	Left.
21	23rd November, 1892, ...	12th March, 1897, ...	316 "	Left.
22	14th June, 1894, ...	13th March, 1893, ...	6 "	Right.
23	27th April, 1894, ...	10th March, 1893, ...	15 "	Right.
24	16th April, 1894, ...	24th February, 1893, ...	101 "	Right.
25		2nd May, 1893, ...	122 "	Left.
		8th August, 1894, ...	55 "	Right.
		30th May, 1894, ...	33 "	Left.
		5th May, 1894, ...	19 "	Left.

26	10th April, 1894,	...	...	...	10 days,	...	...	Left.
27	28th March, 1894,	...	...	...	47	...	...	Left.
28	12th March, 1894,	...	...	...	46	...	...	Left.
29	8th November, 1893,	...	...	...	230	...	...	Left.
30	9th July, 1895,	...	...	...	101	...	...	Left.
31	1st October, 1894,	...	...	...	24	...	...	Left.
32	{ 1—20th April, 1894, ... 2—20th September, 1894,	...	...	...	39	...	= 424 days,	Right.
33	{ 3—18th September, 1895,	...	...	...	320	...	...	Right.
34	{ 8th August, 1894, ... 1—13th June, 1894, ...	...	...	...	65	...	...	Left.
35	{ 2—3rd February, 1897,	...	...	...	252	...	= 282 days,	Left.
36	28th August, 1896,	...	...	...	150	...	...	Left.
37	20th July, 1896,	...	...	...	132	...	...	Left.
38	{ 1—2nd January, 1895,	...	...	...	10	...	...	Right (now both).
39	{ 2—30th September, 1895,	...	...	...	95	...	...	Left.
40	22nd June, 1896,	...	...	...	107	...	= 206 days,	Left.
41	24th July, 1895,	...	...	...	99	...	...	Left.
42	10th June, 1895,	...	...	...	109	...	...	Right.
43	3rd July, 1896,	...	...	...	268	...	...	Right.
44	17th June, 1896,	...	...	...	185	...	...	Left.
45	6th March, 1896,	...	...	...	301	...	...	Right.
46	27th May, 1896,	...	...	...	57	...	...	Left.
47	24th October, 1896,	...	...	...	146	...	...	Right.
48	{ 1—24th December, 1895,	...	...	...	308	...	...	Left.
49	{ 2—12th November, 1896,	...	...	...	338	...	...	Left.
50	{ 5th September, 1898,	...	...	...	195	...	...	Left.
51	{ 1—8th May, 1898, ... 2—23rd August, 1900,	...	...	...	72	...	= 150 days,	Left.
52	4th February, 1898, ...	...	...	...	78	...	...	Right.
53	{ 1—30th April, 1896, ... 2—5th January, 1898,	...	...	...	8	...	= 82 days,	Right.
54	28th April, 1898,	...	...	...	44	...	...	Left.
	28th May, 1897,	...	...	...	38	...	...	Right.
	{ 1—16th December, 1897,	...	...	...	229	...	= 278 days,	Right.
	{ 2—23rd January, 1899,	...	...	...	180	...	...	Right.
		...	...	...	98	...	...	Right.
		...	...	...	33	...	...	Right.
		...	...	...	255	...	...	Right.
		...	...	...	85	...	= 342 days,	Right.
		...	...	...	257	...	...	Right.

TABLE No. II (*continued*).  
DATE OF ADMISSION—DATE OF DISMISSION—LENGTH OF TIME IN HOSPITAL—  
HIP INVOLVED.

No.	DATE OF ADMISSION.	DATE OF DISMISSION.	LENGTH OF TIME IN HOSPITAL.		HIP INVOLVED.
55	{ 1-5th April, 1899, ... 2-10th May, 1899, ...	1st May, 1899, ...	26 days, } 98 "	= 124 days,	Left.
56	3rd March, 1890, ...	28th June, 1899, ...	117 "	...	Right.
57	{ 1-8th May, 1897, ... 2-16th December, 1898, ...	10th August, 1897, ...	94 "	= 157 days,	Left.
58	{ 1-1st June, 1898, ... 2-8th October, 1898, ...	17th February, 1899, ...	63 "	...	Left (now both).
59	{ 1-30th May, 1898, ... 2-25th July, 1898, ...	18th June, 1898, ...	18 "	= 330 days,	
60	3rd March, 1900, ...	16th August, 1899, ...	312 "	...	Right.
61	8th December, 1899, ...	20th June, 1898, ...	21 "	= 142 days,	
62	{ 1-9th April, 1898, ... 2-28th April, 1899, ...	23rd November, 1898, ...	121 "	...	Right.
63	26th March, 1900, ...	20th June, 1900, ...	109 "	...	Right.
64	{ 1-8th April, 1899, ... 2-24th October, 1899, ...	28th February, 1900, ...	82 "	...	Left.
65	{ 3-19th July, 1900, ... 1-22nd November, 1897, ...	18th May, 1898, ...	39 "	= 86 days,	Right.
66	{ 2-28th April, 1900, ... 1-5th December, 1899, ...	14th June, 1899, ...	47 "	...	Right.
67	{ 2-26th February, 1900, ... 10th May, 1900, ...	12th September, 1900, ...	170 "	...	Right.
68	25th May, 1900, ...	21st June, 1899, ...	74 "	= 263 days,	Right.
69	7th August, 1900, ...	17th February, 1900, ...	116 "	...	Left.
70	8th August, 1900, ...	In hospital, ...	73 "	= 399 days,	Right.
		26th July, 1898, ...	244 "	...	Left.
		In hospital, ...	155 "	= 230 days,	Right.
		19th December, 1899, ...	14 "	...	Left.
		30th September, 1900, ...	216 "	...	Right.
		30th September, 1900, ...	143 "	...	Left.
		In hospital, ...	128 "	...	Right.
		28th September, 1900, ...	52 "	...	Left.
		In hospital, ...	53 "	...	Left.

TABLE No. III.

DURATION OF DISEASE BEFORE ADMISSION—TREATMENT (IF ANY)—CONDITION ON ADMISSION:—  
SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION:—SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.
1	Four years.  Second admission.	None.  Extension. Thomas' splint.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Sinuses—one on inner and outer side. Flexion, adduction, inversion. Ankylosis of hip. Several sinuses. No pain.
2	Three years.	In bed two months.	Flexion, adduction, inversion. Fixation of pelvis. Abscess at lower border of gluteus maximus. Sinus on inner side of thigh.
3	Injury two and a half years ago.	None.	Flexion, abduction, eversion. Fixation of pelvis. Fulness over joint.
4	Injury three years ago.	Extension, Western Infirmary, six weeks; and at home two years.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Shortening 1 inch. No abscess.
5	Injury three years ago; fall on trochanter.	In bed six weeks.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Shortening 1 inch. Abscess in gluteal region. Sinus on outer side of thigh.

TABLE No. III (*continued*).

DURATION OF DISEASE BEFORE ADMISSION—TREATMENT (IF ANY)—CONDITION ON ADMISSION :—  
SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION :—SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.
6	Nine months.	In bed two months.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock.
7	Injury ; fall at football.	Blistering.	Flexion alone. Fixation of pelvis: Flattening of buttock. Abscess over great trochanter.
8	First admission, not noted. Second admission.	Not noted. Extension. Thomas' splint.	Fixation of pelvis. Flattening of buttock. Abscess in front of joint. Leg œdematous. Two sinuses leading into joint. Dulness at both apices, with râles.
9	Injury six months ago.	None.	Flexion slight. Fixation of pelvis limited. Abscess on upper and outer side of femur.
10	First admission, two years. Second admission.	"Rest." Extension. Thomas' splint.	Flexion, adduction, inversion. Fixation of pelvis. Pain a prominent symptom. Abscess and two sinuses. Hip as before. Dulness and râles at both apices.
11	Twenty years.	Some bone excised twenty years ago.	Flexion pronounced. Fixation of pelvis. Sinus at upper and inner part of thigh. Cicatrices.



12	Injury three days before; acute onset.	None.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Fulness in groin. Great pain on movement.
13	Two months.	In bed.	Flexion, adduction, inversion. Fixation of pelvis. Night startings. Fulness in front of joint. Shortening $\frac{1}{2}$ inch.
14	Injury four years ago.	In bed; splint.	Flexion, adduction, inversion. Fixation of pelvis. Abscess in front of joint. Trochanter above Nelaton's line.
15	First admission, ten weeks.  Second admission.  "A number of years."	In bed; splint.  Extension. Thomas' splint.  Not stated.	Flexion, abduction, eversion. Fixation of pelvis. Great pain on slightest movement. Fulness around joint. Abscess over great trochanter. Sinus on inner side of thigh.
17	First admission, injury a year and a half ago. Second admission.	None.  Thomas' splint.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Condition not stated.
18	One year.	None.	Flexion, adduction, inversion. Fixation of pelvis. Abscess over outer side of hip. Tubercular family history.

TABLE No. III (*continued*).

DURATION OF DISEASE BEFORE ADMISSION—TREATMENT (IF ANY)—CONDITION ON ADMISSION :—  
SYMPTOMS, SIGNS, WHETHER ABSCESSSES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION :—SYMPTOMS, SIGNS, WHETHER ABSCESSSES, SINUSES, OR NOT.
19	Not stated.	Not stated.	Flexion. Fixation of pelvis. Flattening of buttock.
20	"Leg flexed and fixed as long as he can remember."	Not stated.	Flexion, abduction, eversion. Fixation of pelvis. Great trochanter "abnormally situated." Cicatrices.
21	One month.	Treated for sciatica.	Flexion slight. Fixation of pelvis. Flattening of buttock.
22	Seven years ago had abscess opened in opposite thigh. Present symptoms five months ago.	Lately in Royal Infirmary for disease in other hip.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Abscess formed on outer side of joint. Cicatrices on left.
23	Eight months.	Not stated.	Flexion, abduction, eversion. Fixation of pelvis. No fulness over joint.
24	Since childhood. Free of trouble since, till injury six days ago.	In Western Infirmary, then for eight weeks.	Flexion, adduction, inversion. Fixation of pelvis. No apparent wasting. No fulness in groin. Shortening 3 inches.

25	Five years.	Extension.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Shortening $1\frac{1}{2}$ inch. Abscess outer aspect of thigh.
26	Seven years. Worse since injury three months ago.	Extension for eighteen weeks in Royal Infirmary, and again for eight weeks when abscess opened.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Shortening 2 inches. Sinus for about six years. Urine contains albumen and casts.
27	Two and a half years.	Abscess opened in Western Infirmary two months ago; another two years ago.	Flexion, abduction, eversion. Fixation of pelvis (slight). Thigh tense and boggy. Sinus over great trochanter.
28	Four months.	Rubbing.	Slight flexion. Fixation of pelvis. Flattening of buttock. No fulness in groin. No pain. No shortening.
29	Sixteen weeks.	Extension.	Flexion, abduction, eversion. Fixation of pelvis. Movement very limited and painful. Flattening and broadening of buttock. Shortening 1 inch. Large abscess upper part of thigh. Leg swollen and cedematous.
30	Two months.	...	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock.

TABLE No. III (*continued*).

DURATION OF DISEASE BEFORE ADMISSION.—TREATMENT (IF ANY)—CONDITION ON ADMISSION :—  
SYMPTOMS, SIGNS, WHETHER ABSCESSSES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION :—SYMPTOMS, SIGNS, WHETHER ABSCESSSES, SINUSES, OR NOT.
31	Five years. Worse after injury three months ago.	Blistering.	Flexion (slight), abduction, eversion. Fixation of pelvis. Flattening of buttock. Fulness in groin. No pain.
32	Three months. Injury.	...	First admission— Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Fulness in groin. Second admission— Same as above, but with starting pains at night. (greater tenderness and fulness in groin.
33	One month.	Blistering.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Marked atrophy of leg muscles. Abscess, three months after admission, outer aspect of thigh.
34	Six weeks.	...	First admission— Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. No fulness about joint. No shortening.





TABLE No. III (*continued*).

DURATION OF DISEASE BEFORE ADMISSION—TREATMENT (IF ANY)—CONDITION ON ADMISSION :—  
SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION :—SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.
40	Sixteen years. Injury. Further injury four months ago.	In Royal Infirmary for twelve months; abscess alone opened.	Flexion, adduction, inversion. Fixation (marked) of pelvis. Trochanter above Nelaton's line. Shortening $1\frac{1}{2}$ inch. Sinus in front of trochanter leading inwards towards joint. Cicatrices about thigh.
41	Three years.	Extension, Royal Infirmary, five and a half months.	Flexion, adduction, inversion. Fixation of pelvis (marked). Flattening of buttock. Fulness under Poupart's ligament. No shortening.
42	Not known.	...	Flexion. Fixation of pelvis. Flattening of buttock. No abscess.
43	Five months.	...	Flexion. Fixation of pelvis. Fulness and tenderness around hip.
44	Two years.	Extension. Thomas' splint.	Flexion, abduction, eversion. Fixation of pelvis. Trochanter unduly prominent. Shortening $\frac{1}{2}$ inch. Swelling over buttock. Sinus in groin.

45	Six months. Injury.	...	Flexion, abduction, eversion. Fixation of pelvis. <i>Per rectum</i> :—Tenderness over left acetabulum. Sinus over left buttock.
46	Not known.	...	Flexion, adduction, eversion. Fixation of pelvis. Left trochanter prominent—pathological dislocation. Shortening 2 inches. Muscular wasting.
47	First admission, seven weeks. Injury. Second admission, further injury.	Extension, two months ; Thomas' splint, six months.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Second admission— Symptoms not noted.
48	Six months. Injury.	Rubbing.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Fulness in groin.
49	First admission, injury. Second admission.	... Extension, one month ; Thomas' splint.	Flexion. Fixation of pelvis. Flattening of buttock. Flexion, abduction, eversion. Fixation. Muscular atrophy. Fulness in groin.
50	Six months.	...	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Fulness in groin.

TABLE No. III (*continued*).

DURATION OF DISEASE BEFORE ADMISSION—TREATMENT (IF ANY)—CONDITION ON ADMISSION :—  
SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION—SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.
51	First admission, one year. Injury. Second admission.	... Extension. Thomas' splint.	Flexion, slight adduction, inversion. Fixation of pelvis. Flattening and broadening of buttock. Abscess outer aspect of thigh. Otherwise I.S.Q.
52	One year.	...	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock.
53	Five months. Injury.	Rest in bed.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Fulness and tenderness at joint.
54	First admission, indefinite. Second admission.	... Extension, one month ; Thomas' splint.	Flexion. Fixation of pelvis. Flattening of buttock. Flexion, adduction, inversion. Abscess in front and side of joint.
55	First admission, six months. Second admission. Third admission.	Extension, two months. Thomas' splint. Thomas' splint.	Flexion. Fixation of pelvis. Flattening of buttock. Fulness and tenderness around joint, Symptoms aggravated. Flexion, adduction, inversion. (See Table No. V.)

56	Nine months. Injury.	Rest in bed.	Flexion, adduction, inversion. Fixation of pelvis. Buttock flattened. Fulness and tenderness around joint. Intra-pelvic (see Table No. 4) abscess.
57	First admission.  Second admission.	...  Extension. Thomas' splint.	Flexion (slight). Fixation of pelvis. No swelling. Flexion, adduction, inversion. Flattening of buttock. Abscess at upper and outer part of thigh.
58	First admission, eleven weeks.  Second admission.	For rheumatism.  Extension. Thomas' splint.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Symptoms aggravated. Night startings. Abscess in front of joint.
59	First admission, two months. Kick on trochanter.  Second admission.	...  Extension. Thomas' splint.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Symptoms aggravated. Abscess pointing in front of joint.
60	Sixteen months.	...	Flexion. Fixation of pelvis. Starting pains. Fulness all round joint. Great pain on attempted movement.
61	One year.	Change of air.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. No fulness.

TABLE No. III (*continued*).  
 DURATION OF DISEASE BEFORE ADMISSION—TREATMENT (IF ANY)—CONDITION ON ADMISSION :—  
 SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.

No.	DURATION OF DISEASE BEFORE ADMISSION.	TREATMENT (IF ANY).	CONDITION ON ADMISSION :—SYMPTOMS, SIGNS, WHETHER ABSCESES, SINUSES, OR NOT.
62	Eighteen months.	...	Flexion. Fixation of pelvis.
	Second admission.	Extension. Thomas' splint.	Flattening of buttock. Flexion, adduction (partial), inversion. Starting pains. Fulness and tenderness in groin.
63	Seventeen years. Injury.	Treatment in Royal and Western Infirmaries.	Flexion, adduction, inversion. Fixation of pelvis. Ankylosis. Flattening of buttock. Fulness over trochanter. (Glands in groin enlarged. Puckered cicatrix at gluteal fold. Discharging sinus below old scar.
64	Four years.	Extension.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. No fulness at joint.
	Second admission. Third admission.	Thomas' splint. Do.	Abscess below cicatrix. Abscess in front communicating with joint.
65	First admission, nine months (right hip).	Extension.	Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Great pain on attempted movement. Fulness around great trochanter.



66	Second admission. No complaint of left hip on first dismission.  First admission, not noted.  Second admission.	...	Similar to last, but with Fulness in groin and Abscess in buttock. Movements in right free but restricted.
67	One year. Injury.	...  Extension.	Symptoms not noted. Took measles, and sent to Belvidere. Limb in extension. Fixation of pelvis. Fulness in front. Father dying of phthisis.
68	Seven months.	...  "Splint two months."	Flexion. Fixation of pelvis. Flattening of buttock. No fulness in groin.
69	One year. Injury.	Extension in Ayr Hospital, seven months.	Flexion, abduction, eversion. Fixation of pelvis. Flattening of buttock. Abscess in front and outer aspect of thigh.
70	Four years.	Abscess opened in Western Infirmary.	Fixation in extended position. Flattening of buttock. Fulness in groin. Shortening $\frac{1}{2}$ inch.  Flexion, adduction, inversion. Fixation of pelvis. Flattening of buttock. Sinus on inner side of thigh.

alone was opened, 91 days; and when excision was performed, 136 days (Table No. II).

*Hip involved.*—There was found to be very little difference in the liability of one hip to be involved more than the other.

In 36 cases the right hip was involved, in 34 the left, in 3 both. In each of the three last the right hip was the seat of the mischief to begin with, and it was only when the patient had begun to get about that the other joint became involved, possibly on account of the greater strain thrown on the sound limb (Table No. II).

*Duration of disease before admission.*—The duration of the disease prior to admission was not stated, indefinite, or unknown, in 12 out of 70 cases. In some of these, however, it was known to have been there for years, and in one case since childhood.

In 3 of the remaining cases the duration of the mischief was over ten years—twenty, seventeen, sixteen years respectively.

Taking only those cases where a definite statement was given, the average duration of the disease before admission comes out at over two years (two years four months). This illustrates in a striking manner the extreme chronicity of the cases dealt with (Table No. III).

*History of injury.*—In 24 cases there was a definite and distinct history of injury, occasionally of an indirect nature, but mostly direct, such as a fall, blow, or kick on the trochanter,

The injury was very seldom of a severe nature—an injury which, in a healthy individual, would not have resulted in anything more serious than a bruise.

In the remainder of the cases a history of injury was not stated, and it may be taken that if there were any injury it was of such a trivial nature as to be overlooked (Table No. III).

*Nature of previous treatment.*—Nearly a half of the cases (32) had received no form of previous treatment other than the usual domestic remedies. In the majority, however (38), some form of treatment had been adopted for the hip condition, but usually of the most crude description.

With the exception of the cases treated in other infirmaries (*vide infra*), in almost no instance could the treatment be considered satisfactory, not that advice had not been asked or given, but simply because the parents or the patients themselves were unable or unwilling to have it carried out.

One case had been treated for sciatica, another for rheumatism, while a third had the joint systematically “rubbed.”

In a comparatively small proportion, extension had been employed; in a few, some form of splint.

No fewer than 9 cases had received some form of treatment—extension, abscess opened, excision, in a similar institution—just the class of case to go the round of the hospitals, another argument in favour of having some harbour of refuge for these cases where they would not be regarded as “chronics” or sources of danger to other more interesting if less septic cases (Table No. III).

#### CONDITION ON ADMISSION—SYMPTOMS, SIGNS, WHETHER ABSCESSSES, SINUSES, OR NOT.

No attempt is made to discuss the various symptoms and signs of hip-joint disease; a bald statement of the symptoms in their relative frequency is alone given.

Of the symptoms noted on admission,

*Fixation of the affected joint*, involving restricted movement and lameness, was by far the most commonly observed and most constant symptom present, occurring in almost every case to a greater or less extent.

The degree or amount of fixation was found, to a certain extent, to be an index as to the state of advancement of the disease.

Fixation was seen, for example, to lessen, if not completely disappear, in an early case after a few days' rest, or to be limited so as to prevent movement in only one direction, or to be complete, resisting attempted movement in any direction—a condition of fibrous or bony ankylosis.

The amount of fixation was readily ascertained by observing to what extent the pelvis moved with the limb, and the situation of the disease in some degree by noting in what direction fixation was most marked, more especially with regard to the movement of rotation.

Of the various movements at the hip-joint—flexion, extension, abduction, adduction—limitation of the movements of abduction, and with the thigh flexed, of extension, were the most easily recognised and most frequently observed, due, perhaps, to the advanced state of the disease in most of the cases.

The drawing of two lines, one from the umbilicus to the symphysis and another between the anterior superior spines, helped the eye in judging to what extent the pelvis moved with the limb.

*Position of the limb.*—In nearly all of the cases (67) the

TABLE No. IV.  
 WHETHER OPERATED UPON AND NATURE—SITUATION OF THE DISEASE—BONE REMOVED.

No.	WHETHER OPERATED UPON, AND NATURE.	SITUATION OF THE DISEASE.	BONE REMOVED.
1	Second admission—Excision, 5th November, 1892.	Epiphysitis—neck of femur. Head eroded and dislocated. Acetabulum perforated. Synovial membrane fibrous.	Head and neck.
2	Excision, 2nd February, 1890. Amputation, 18th March, 1891.	Epiphysitis—neck of femur. Erosion of upper part of acetabulum. Membrane pulpy.	Head and neck.
3	No operation.	...	...
4	No operation.	...	...
5	Abscess alone opened, 13th June, 1891.	...	...
6	No operation.	...	...
7	Excision, 11th December, 1891.	Epiphysitis—neck of femur. Head eroded and carious. Acetabulum in part eroded. Membrane pulpy and purulent.	Through trochanter.
8	First admission—Abscess alone opened. Second admission—Amputation advised and refused.	...	...
9	Abscess alone opened.	Epiphysitis—neck of femur. Carious spot, anterior aspect of neck.	...

10	Second admission — Abscess alone opened.	...	...	...
11	Abscess alone opened.	...	...	...
12	Joint drained, not excised.	Epiphysitis—neck of femur.	...	...
13	Excision, 27th September, 1893.	Epiphysitis—neck of femur. Head eroded and partly absorbed. Pus in joint.	Head.	...
14	Excision, 27th May, 1893.	Epiphysitis—neck of femur. Head eroded and dislocated backwards. Fossa in posterior aspect of neck, below epiphyseal line. Acetabulum eroded ; not perforated. Membrane fibrous.	Through trochanter.	...
15	Second admission — Abscess opened.	...	...	...
16	Excision.	Epiphysitis—neck of femur. Head fatty. No involvement of acetabulum. Membrane not apparently affected.	Head.	...
17	Excision, 22nd May, 1897.	Acetabulum (chiefly) bone carious and perforated. Abscess in pelvis. Femoral head eroded and fatty. Membrane pulpy.	Through trochanter.	...
18	Operation refused ; lung condition.	...	...	...
19	No operation.	...	...	...
20	No operation.	...	...	...
21	No operation.	...	...	...



TABLE No. IV (*continued*).  
 WHETHER OPERATED UPON AND NATURE—SITUATION OF THE DISEASE—BONE REMOVED.

No.	WHETHER OPERATED UPON, AND NATURE.	SITUATION OF THE DISEASE.	BONE REMOVED.
22	Abscess alone opened.	...	...
23	No operation.	...	...
24	No operation.	...	...
25	Excision, 20th April, 1894.	Acetabulum (chiefly) bone carious and perforated. Abscess in pelvis. Head eroded and carious. Membrane pulpy.	Head and neck. Large part of acetabulum.
26	Patient refused operation.	...	...
27	Sinuses opened. Joint not opened.	Epiphysitis—great trochanter.	...
28	No operation.	...	...
29	Excision, 29th November, 1893.	Epiphysitis—neck of femur. Head eroded, partly absorbed and lying loose in acetabulum. Carious areas in neck. Membrane pulpy.	Through base of trochanter.
30	No operation.	...	...
31	Actual cauterly.	...	...

32	Second admission — Excision, 9th November, 1894.  30th April, 1895.  Third admission — 18th September, 1895.	Epiphysitis—neck of femur. Carious areas in neck below epiphyseal line. Membrane pulpy. Carious and caseous bone removed from acetabulum and ramus of ischium. Sinus scraped and some small pieces of bone removed.	Through base of trochanter.
33	Excision, 7th November, 1894.  Amputation, 30th November, 1894.	Acetabulum (chiefly) bone carious and perforated. Abscess in pelvis. Head eroded and carious. Synovial membrane pulpy. ...	Through trochanter.  ...
34	Excision in Western Infirmary (See Table No. V). Abscess opened in Victoria Infirmary.	Acetabulum perforated. Abscess in pelvis.	...
35	Excision in Sick Children's Hospital. No operation at Victoria Infirmary.	...	...
36	Excision, 29th July, 1896.	Synovial membrane (chiefly). Head eroded and fatty. Acetabulum eroded; not perforated.	Head and neck.
37	Excision, 23rd October, 1895.	Joint completely disorganised. Synovial membrane pulpy. Head eroded and fatty. Acetabulum eroded.	Through trochanter.
38	Excision, 30th June, 1896.	Epiphysitis—neck of femur. Head separated and lying loose in acetabulum. Membrane pulpy.	Head and neck.

TABLE No. IV (*continued*).  
 WHETHER OPERATED UPON AND NATURE—SITUATION OF THE DISEASE—BONE REMOVED.

No.	WHETHER OPERATED UPON, AND NATURE.	SITUATION OF THE DISEASE.	BONE REMOVED.
39	Excision, 28th October, 1895.	Epiphysitis—neck of femur. Head partly absorbed and out of acetabulum. Carious areas in neck of bone below epiphysis. Acetabulum eroded; not perforated. Membrane pulpy. Pus in joint.	Through base of great trochanter.
40	Excision, 3rd July, 1895.	Epiphysitis—neck of femur. Head completely absorbed. Acetabulum eroded; carious in places. Membrane pulpy.	Through base of great trochanter.
41	Excision, 10th July, 1896. 19th December, 1896.	Synovial membrane (chiefly). Head and acetabulum eroded in places. Bone fatty, not evidently carious. Carious and caseous areas in neck of bone.	Through anatomical neck. Through base of great trochanter.
42	Excision, 24th November, 1896.	Epiphysis—neck of femur. Membrane pulpy. Acetabulum not involved.	Head and neck.
43	Excision, 17th July, 1896.	Acetabulum (chiefly) bone carious and perforated. Abscess in pelvis. Head of femur eroded. Membrane pulpy.	Head and neck.

44	Excision, 10th March, 1896.	Epiphysitis—neck of femur. Head partly absorbed, denuded of cartilage, and in part ankylosed to acetabulum. Membrane fibrous.	Through great trochanter.
45	Excision, 10th June, 1896.	Acetabulum (chiefly) bone carious, denuded of cartilage, and all but perforated. Head fatty. Membrane pulpy.	Head and neck.
46	Excision, 20th January, 1897.	Joint completely disorganised. Erosion of head and acetabulum. Bone fatty, not carious. Membrane pulpy.	Through great trochanter.
47	Second admission—Excision, 20th November, 1896.	Synovial membrane (chiefly). Erosion of head and acetabulum, in latter round ligamentum teres. Bone fatty, not carious.	Through great trochanter.
48	No operation.	...	...
49	Excision, 29th July, 1900.	Epiphysitis—neck of femur. Head partly absorbed and adherent to acetabulum. Membrane fibrous.	Head.
50	Excision, 23rd February, 1898.	Acetabulum (chiefly) bone carious and perforated. Abscess in pelvis. Head fatty, not carious. Membrane pulpy.	Head and neck.
51	First admission—Excision, 19th May, 1896.	Epiphysitis—neck of femur. Head partly absorbed, eroded, and ankylosed to acetabulum. Membrane fibrous.	Head and neck.
52	No operation.	...	...

TABLE No. IV (*continued*).  
 WHETHER OPERATION UPON AND NATURE—SITUATION OF THE DISEASE—BONE REMOVED.

No.	WHETHER OPERATED UPON, AND NATURE.	SITUATION OF THE DISEASE.	BONE REMOVED.
53	Excision, 16th June, 1897.	Epiphysitis—neck of femur. Acetabulum eroded. Membrane pulpy.	Through great trochanter.
54	29th October, 1897. Excision.	Carious and caseous bone in femur below section. Joint completely disorganised. Erosion of head and acetabulum. Bone fatty. Membrane pulpy.	Removal of 2 inches of shaft. Head and neck.
55	Second admission—Excision, 17th May, 1899.	Synovial membrane (chiefly). Erosion of head and acetabulum, in latter round ligamentum teres. Bone fatty.	Head.
56	Third admission—Abscess opened. Excision, 14th March, 1899.	... Acetabulum (chiefly) bone carious and perforated. Abscess in pelvis. Membrane pulpy.	... Not stated.
57	Second admission—Excision, 21st December, 1898.	Epiphysitis—neck of femur. Small cavity in neck (posterior) containing seques- trum. Membrane fibrous.	Through great trochanter.
58	Second admission—Excision, 23rd November, 1898.	Synovial membrane (chiefly). Erosion of head and acetabulum. Bone fatty.	Head.



59	Second admission — Excision, 16th August, 1898.	Acetabulum (chiefly) bone carious and occupied by a sequestrum corresponding to attachment of ligamentum teres. Head fatty. Membrane pulpy.	Through great trochanter.
60	Excision, 20th March, 1900.	Synovial membrane (chiefly). Erosion of head and acetabulum. Bone fatty.	Head.
61	Excision, 21st December, 1899.	Epiphysitis—neck of femur. Head partly absorbed and eroded. Erosion of acetabulum. Membrane fibrous.	Head.
62	Excision, 5th May, 1898.	Acetabulum (chiefly) bone carious, not perforated. Bone fatty. Membrane pulpy.	Head.
63	Excision, 30th March, 1900.	Joint completely disorganised. Articular surfaces denuded of cartilage and firmly ankylosed. Tubercular pockets around joint. Membrane fibrous.	Head and neck.
64	First admission — Excision, 28th April, 1899.	Epiphysitis—neck of femur. Head partly absorbed and eroded. Acetabulum eroded. Membrane pulpy.	Head and neck.
65	First admission — Excision, 7th January, 1898 (right hip).  Second admission — Excision, 2nd May, 1900 (left hip).	Acetabulum (chiefly) bone carious at ligamentum teres. Head eroded and partly absorbed. Joint full of pus. Membrane pulpy. Joint completely disorganised. Articular surfaces eroded. Membrane pulpy.	Head and neck.  Head and neck.

TABLE No. IV (*continued*).  
 WHETHER OPERATED UPON AND NATURE—SITUATION OF THE DISEASE—BONE REMOVED.

No.	WHETHER OPERATED UPON, AND NATURE.	SITUATION OF THE DISEASE.	BONE REMOVED.
66	Excision, 13th March, 1900.  2nd May, 1900.	Epiphysitis—neck of femur. Head eroded, partly absorbed, and lying loose in acetabulum. Acetabulum, eroded, carious, and all but perforated. Membrane pulpy. Intra-pelvic abscess opened, acetabulum perforated.	Head and neck.
67	Excision, 13th July, 1900.	Synovial membrane (chiefly). Erosion of acetabulum. Head fatty.	Head.
68	Abscess opened, 29th May, 1900. Excision, 26th June, 1900.	...  Epiphysitis—neck of femur. Articular surfaces eroded. Membrane pulpy.	...  Through trochanter.
69	Excision, 10th August, 1900.	Epiphysitis—neck of femur. Focus of carious bone in neck below epiphyseal line. Membrane fibrous.	Head and neck.
70	Excision, 15th August, 1900.	Joint completely disorganised. Articular surfaces denuded of cartilage and ankylosed. Synovial membrane pulpy, with tendency to fibrous change.	Head and neck.

TABLE No. V.  
CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
1	First dismission: July, 1890.— I. S. Q. Second dismission: February, 1893. —Five sinuses. No pain. General health good.	September, 1900.—One sinus still open. No amyloid change. Leg straight. Movements free, but muscles feeble. Is a tailor and sits cross-legged. Can kiss knee and place heel on knee. Eats well. General health good.	10 years.
2	May, 1891.—Sinus unhealed. General health good.	September, 1900.—Amputation wound healed four and a half years ago. The boy is in fair health, though pale and not very strong. He coughs a little at times. Has weak eyes and a discharging ear.	9½ years.
3	February, 1891.—Marked improvement. Went out wearing a Thomas' splint.	Not found.	...
4	March, 1891.—Dismissed wearing Thomas' splint.	September, 1900.—There is some ankylosis, but leg in straight position, although a little inverted. Pelvis tilted up on left side so as to make shortening look greater than it is. Abscess formed two years ago, but healed up. No pain now.	9½ years.

TABLE No. V (*continued*).  
 CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
5	October, 1891.—Sinuses healed. Dismissed wearing Thomas' splint. May, 1892.—Well in every respect. Splint removed.	September, 1900.—Sinuses remain healed. A fair amount of movement at hip in all directions. Can walk five miles without much fatigue. Had left testicle removed a year ago in Royal Infirmary for tubercular disease.	9 years.
6	September, 1891.—Dismissed wearing Thomas' splint. Free from pain.	September, 1900.—After going home leg became worse, and was subsequently amputated in Royal Infirmary, within a year of leaving Victoria Infirmary. Healed up now. Health fair. At work.	9 years.
7	June, 1892.—Sinuses open; otherwise in good health.	September, 1900.—Went to Orphan Homes, Bridge-of-Weir, where sinuses healed in four months. Remained healed for one month, when again broke down and discharged for six months. Remained healed for three years, since when it has been discharging very slightly from one sinus. General health excellent. No amyloid change. Movement at hip free in all directions; flexion most limited. Movement beyond a certain limit performed by sacro-iliac joint.	8 years.

8	First dismission : January, 1892. — Healed. Wearing Thomas' splint. Second dismission : May, 1892. — Leg œdematous. Two sinuses leading to joint. Dulness at both apices with clicking râles.	(See Table No. VI.)	...
9	May, 1892. — Healed. Wearing Thomas' splint.	September, 1900. — No lameness. Wound broke once, but healed up. No pain since. Wore splint two months. Movements are now perfect. Two cicatrices in front of thigh.	8½ years.
10	March, 1891. — Dismissed wearing Thomas' splint. Discharging sinuses. February, 1892. — Hip as before. Dulness and clicking râles at both apices.	(See Table No. VI.)	.
11	February, 1892. — Condition as on admission.	Not found.	...
12	November, 1893. — Improved. Induration in groin increased; occasional pain. Sinus discharging.	September, 1900. — Hip ankylosed in slightly flexed position. Old sinus closed. Abscess formed in ischio-rectal fossa; discharging more or less for last four years. Had abscess between scapulæ two years ago; treated in Royal Infirmary; hip not treated. At work for two and a half years. Health fair.	7 years.
13	June, 1894. — Healed. Wearing Thomas' splint.	Not found.	6½ years.
14	(See Table No. VI.)	...	...



TABLE No. V (*continued*).  
CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
15	August, 1893.—Improved after extension. Dismissed wearing Thomas' splint. February, 1898.—Wounds almost healed.	September, 1900.—Walks with very slight limp. Some ankylosis, but leg straight. Movements restricted—cannot flex thigh to right angle, nor kiss knee, nor place heel on knee. General condition good.	7 years.
16	November, 1893.—Healed. Dismissed wearing Thomas' splint.	September, 1900.—Cicatrix soundly healed. No pain now. Walks about a good deal. Is a shoemaker. Movements good within limits—cannot kiss knee, can place heel on knee.	7 years.
17	May, 1893.—Slight improvement from extension. Dismissed wearing Thomas' splint. March, 1897.—Two discharging sinuses. General health good.	September, 1900.—Sinus closed a year after dismission. Movements good, but restricted. Cannot flex thigh enough to kiss knee or place heel on knee. Brother has a tubercular elbow.	First dismission : 7 years. Second dismission : 3½ years.
18	March, 1893.—I. S. Q.	Removed to City Poorhouse. (See Table No. VI.)	...
19	March, 1893.—Improved with extension. Dismissed wearing Thomas' splint.	Not found.	...
20	February, 1893.—Improved with extension. Dismissed wearing Thomas' splint.	Not found.	...

21	May, 1893.—Improved with extension. Dismissed wearing Thomas' splint. (See Table No. VI.)	(See Table No. VI.)	...
22	August, 1894.—Rapid improvement with extension. Movements almost perfect. Dismissed wearing Thomas' splint.	...	...
23	May, 1894.—Improved with extension. Dismissed wearing Thomas' splint. (See Table No. VI.)	Not found.	...
24	April, 1894.—I. S. Q. Refused operation.	Not found. Neighbours state that she never came back to district from the Infirmary.	...
25	May, 1894.—Quite healed. No restriction of movement.	September, 1900.—Sinuses still discharging. Leg flexed and ankylosed. Leg greatly atrophied. Walks with stilt. Was in bed most of summer with pain in hip.	6½ years.
26	April, 1894.—Great improvement with extension. Dismissed wearing Thomas' splint.	September, 1900.—Not lame. Measurements equal. No symptoms since dismission.	6 years.
27	June, 1894.—Wound open. Dismissed wearing Thomas' splint.	September, 1900.—No lameness. Wore splint two months, then walked quite well. No pain since.	6½ years.
28	October, 1895.—Improved with extension. Dismissed wearing Thomas' splint.	Not found.	6 years.
29		Not found.	5 years.

TABLE No. V (*continued*).  
CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
31	November, 1894.—Not much, if any, improvement.	Not found.	6 years.
32	May, 1894.—Improved with extension. Dismissed wearing Thomas' splint. August, 1895.—Discharging sinuses. No pain. November, 1895.—Wound all but healed.	September, 1900.—Sinus healed in two weeks after dismission. Cicatrix sound. Movements almost perfect; uses foot as a machinist. General condition good.	First dismission: 6 years. Third dismission: 5 years.
33	April, 1895.—Two open sinuses. General condition fairly good.	(See Table No. VI.)	...
34	November, 1894.—I. S. Q. Taken out against advice. June, 1897.—Discharging sinus. Shortening $1\frac{1}{2}$ inch. Flexion. Fixation.	September, 1900. Several abscesses formed since dismission and healed again. (One sinus still leaks occasionally in front of trochanter. There is slight flexion and fixation. Movements are mostly followed by pelvis. Runs about actively; takes his food well.	First dismission: 6 years. Second dismission: 3 years.
35	September, 1896.—I. S. Q. General condition improved.	September, 1900.—Not found at address. A neighbour remembers the girl, and says she was very ill after coming home from the Infirmary, and probably did not live long.	...
36	October, 1896.—Wound healed. Dismissed wearing Thomas' splint.	September, 1900.—Parents state that child was well for about three months after coming home, and walked about.	4 years.

37	<p>April, 1895.—Improved with extension. Dismissed wearing Thomas' splint.</p> <p>October, 1896.—Dismissed wearing Thomas' splint. Wound healed.</p>	<p>Opposite hip (left) then became diseased. She was taken to Royal Infirmary, but nothing was done.</p> <p>Abscesses formed, and she was taken to the Eastpark Home, where she has been for two years in bed.</p> <p>Seen at Eastpark Home.</p> <p>Child very pale. Abdomen much distended. Legs very thin and drawn up on belly.</p> <p>Right hip very well, can be straightened; cicatrix sound.</p> <p>Left ankylosed in full flexion, with several sinuses which have discharged for two years. No measurements taken from position of child.</p> <p>September, 1900.—Movements perfect. Can place heel over right knee. Cicatrix sound.</p>	4½ years.
38		<p>September, 1900.—Wound sound. Movements perfect.</p> <p>Walks without a stick, but has considerable limp, as he has no correcting sole.</p> <p>Has had some symptoms in other hip for some time—stiffness, some ankylosis, and thickening of trochanter (for a year).</p> <p>Left is now the better limb.</p>	4 years.
39	<p>April, 1896.—Wound not healed. Dismissed wearing Thomas' splint.</p>	<p>September, 1900.—In bed at present, but condition very good.</p> <p>Has been in Eastpark Home for four years.</p> <p>Has been going about in crutches, but had some pain lately and was put back to bed.</p> <p>Sinus is still discharging.</p> <p>Movements are restricted.</p> <p>Cannot lift leg from horizontal, cannot kiss knee or place heel over knee.</p> <p>Fat. Appetite good.</p>	4½ years.

TABLE No. V (*continued*).

## CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
40	December, 1895. —Small sinus open. Dismissed wearing Thomas' splint.	September, 1900. —Sinus healed two weeks after leaving Infirmary. Broke out again six months later. Scraped in Royal Infirmary and soon healed. Has opened and closed several times since. Very slight leak at present. Movements fair, but restricted. Cannot kiss knee, can place heel over knee. Married two years ago.	5 years.
41	April, 1897. —Sinuses open, discharging, and sluggish. Dismissed wearing Thomas' splint.	September, 1900. —Neighbours say she died six months ago of hip disease at Kirkintilloch.	3½ years.
42	January, 1897. —(See Table No. VI.)	...	...
43	November, 1896. —Wound healed. Dismissed wearing Thomas' splint.	September, 1900. —Wound sound. Movements quite free. Kisses knee. Limb straight. General health good.	4 years.
44	January, 1897. —Sinus on inner side of thigh superficial. Dismissed wearing Thomas' splint.	September, 1900. —Wound quite healed. Movements fair, but restricted. Can raise foot when lying horizontal about 12 inches. Cannot kiss knee or place heel over knee. Uses crutch for safety, but does not actually require it. Well pleased with result. General health good.	3½ years.



45	May, 1897.—Sinuses unhealed and looking very sluggish. Dismissed wearing Thomas' splint.	(See Table No. VI.)	...
46	May, 1897.—Wound practically healed. Dismissed wearing Thomas' splint.	September, 1900.—Not found. Removed from Motherwell to Glasgow years ago; nobody knows address.	3½ years.
47	January, 1897.—Wound almost healed. Dismissed wearing Thomas' splint.	September, 1900.—A little scab on cicatrix; leaks a very little at times. At school. Movements quite free. Can almost kiss knee and place heel on knee. Takes food well and is in good condition. September, 1900.—No lameness. No wasting. Movements perfect.	3½ years.
48	September, 1898.—Dismissed wearing Thomas' splint.		2 years.
49	June, 1898.—Improved with extension. Dismissed wearing Thomas' splint.	September, 1900.—At present under treatment.	First admission : 2 years.
50	September, 1898.—Sinuses discharging. Pelvic infection. Dismissed wearing Thomas' splint.	September, 1900.—One sinus still discharging, "has never dried up." Movements very good. Kisses and places heel on knee. No ankylosis. Takes food well. General health good.	2 years.
51	October, 1896.—Wound healed. Dismissed wearing Thomas' splint. Second dismission: Discharging sinus.	September, 1900.—Wound healed up shortly after dismission. Movements fair, but restricted. Cannot quite kiss knee. Leg straight. Walks with limp. Takes food well. At school. General condition good.	2½ years.

TABLE No. V (*continued*).  
CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
52	May, 1898.—Movements good. No pain. Dismissed wearing Thomas' splint.	September, 1900.—Was worse for some time after going home, but improved without treatment. Has had no complaint for six months, and is not lame except occasionally when tired. Always sleeps with thigh flexed fully. No starting pains. No limitation of movement. Has some enlarged and tender glands in right groin, and occasionally a purulent discharge from vagina. Otherwise health good.	2½ years.
53	February, 1898.—Two sinuses open. Dismissed wearing Thomas' splint.	September, 1900.—One sinus healed shortly after going home; the other still discharging copiously. Leg flexed, adducted, and inverted. Partial ankylosis and restricted movement. Pelvis tilted up on right. Some enlarged and tender glands in right groin. Passes a good deal of urine. Has albumen and hyaline casts. Sinus leads down to bare bone.	2½ years.
54	March, 1898.—Improved with extension. Dismissed wearing Thomas' splint. October, 1899.—Three discharging sinuses.	September, 1900.—Sinuses soundly healed, Healed a month after admission to Homes. Movement at hip free in all directions. General health good.	1½ year.

55	May, 1899.—Improved with extension. Dismissed wearing Thomas' splint. August, 1899.—(After excision) Wound soundly healed. Dismissed wearing Thomas' splint.	September, 1900.—At present in hospital. Removed splint at end of six months. Collection formed for which she is under treatment.	First dismissal: 18 months.
56	June, 1899.—Sinus open. Dismissed wearing Thomas' splint.	September, 1900.—Sinus still discharging. Has a little pain at night sometimes. Movements fairly free, very little ankylosis. Can almost kiss knee. Taking food well, and in good condition.	1½ year.
57	August, 1897.—Improved with extension. Dismissed wearing Thomas' splint. Second dismissal (after excision): February, 1899.—Wound healed. Thomas' splint.	...	First dismissal: 3 years. Second dismissal: 1½ year.
58	June, 1898.—Improved with extension. Dismissed wearing Thomas' splint. August, 1899 (after excision).—Two sinuses open. Suspicion of mischief in right hip.	September, 1900.—Found in bed. Sinuses have healed up and at times opened again. Movements of left hip fair, but restricted. Abscesses have formed round right hip, which is ankylosed. Leg flexed, abducted, and everted. There are four sinuses and a good deal of inflammatory swelling round joint (right).	First dismissal: 2 years. Second dismissal: 1 year.
59	June, 1898.—Improved with extension. Dismissed wearing Thomas' splint. November, 1898 (after excision).—Sinus open. Thomas' splint.	September, 1900.—Wound closed at time of examination. Said to heal and reopen at times. Movements restricted. Does not raise leg far when lying flat, and cannot kiss knee. Takes food well. Growing quickly. In fair condition.	2 years.

TABLE No. V (*continued*).

CONDITION ON DISMISSION—CONDITION AT PRESENT—LENGTH OF TIME SINCE DISMISSION.

No.	CONDITION ON DISMISSION.	CONDITION AT PRESENT.	LENGTH OF TIME SINCE DISMISSION.
60	June, 1900.—Sinus open. Dismissed wearing Thomas' splint.	September, 1900.—Wound soundly healed. Limb straight. Discarded splint. Child fat and in good condition. Able to run about without aid.	3 months.
61	February, 1900.—Wound healed. Dismissed wearing Thomas' splint.	September, 1900.—Wound intact. Pelvis tilted up slightly on left. Movements very good. Leg straight. Child fat and taking food well. Is wearing splint.	7 months.
62	May, 1898.—Improved with extension. Dismissed wearing Thomas' splint. June, 1899 (after excision).—Wound healed. Thomas' splint.	September, 1900.—Wound sound. Does not use crutch now except on going out. Movements fair, but not quite free. Cannot kiss knee. Taking food well. Growing rapidly.	First dismission : 2 years. Second dismission : 1 year.
63	September, 1900.—Two sinuses open. Dismissed wearing Thomas' splint. General health good.	September, 1900.—Just dismissed.	1 month.
64	June, 1899.—Wound healed. Dismissed wearing Thomas' splint. February, 1900.—Sinus which necessitated second admission, healed.	September, 1900.—Sinus at present discharging a very little. Movements fair, but restricted. Cannot kiss or place heel on knee. General health good.	First dismission : 1 year. Second dismission : 9 months.

65	July, 1898.—Right hip. Dismissed wearing Thomas' splint. No complaint of left hip.	September, 1900.—At present in hospital. Sinus on right healed. Sinuses still discharging on left. Granulations sloughy, oedematous, and unhealthy. Putting on weight.	First dismissal : 1 year.
66	December, 1899.—Improved with extension. Dismissed wearing Thomas' splint. March, 1900.—Excision.	September, 1900.—One sinus open; quite superficial. Movements very free, scarcely any restriction. General health excellent.	...
67	September, 1900.—Wound soundly healed. Pelvis moves with thigh. Inguinal glands of affected side enlarged and tender on deep pressure. Dismissed wearing Thomas' splint.	September, 1900.—Just dismissed.	...
68	September, 1900.—At present in hospital.	September, 1900.—Two sinuses discharging. Putting on weight. Slowly healing.	...
69	September, 1900.—At present in hospital.	September, 1900.—Wound healed. Movements, fair, but restricted. Entirely free from pain. Practising getting about with the aid of crutches.	...
70	September, 1900.—At present in hospital.	September, 1900.—Sinuses healed. Movements fair, but restricted. General health very good.	...



thigh was flexed to some extent, and where there was no flexion—apart from lordosis—extension by weight and pulley had been used or excision of the joint been performed.

In less than a fourth there was flexion alone without any appreciable tendency to abduction or adduction.

In nearly a third the thigh was flexed and abducted, with some eversion; in a little less than a half in a position of flexion, adduction, and inversion.

An attempt was made to draw some conclusion from the position of the limb as to the situation and extent of the disease, but found unsatisfactory, except that the earlier the case the more likely was the limb to be found in a position of flexion, abduction, and eversion, and the later and more extensive the disease in a position of flexion, adduction, and inversion.

*Shortening.*—Apparent alteration in the length of the limb was present in a proportion of the cases depending upon the position of the limb.

Real shortening was found in no less than 15 cases, yielding an average of about  $1\frac{1}{4}$  inch, another illustration of the advanced state of many of the cases treated.

*Flattening of the buttock.*—This was noted as a sign in more than half of the cases, and must be taken to include the general wasting of the limb, so frequently an accompaniment of joint disease in general.

*Fulness.*—Fulness around the joint was noted in 18 cases—a fulness not accompanied by fluctuation, but in some cases by a certain amount of tenderness.

*Abscess.*—Abscess was pronounced in 26 cases, more than a third, before any operative measure was attempted; sinuses existed in 14 cases, cicatrices in 4.

*Night-startings.*—These were noted in only 4 cases. This is a small proportion considering the number of cases where the cartilage was found eroded, but, as extension was employed immediately on admission, this might account for the absence of this symptom.

*Complications.*—In 4 cases there was evidence of phthisis on admission (Table No. V); in 2 of amyloid degeneration.

#### WHETHER OPERATED UPON AND NATURE (TABLE NO. IV).

##### 1. *No Operation*—15 Cases.

No operation was required or performed in 15 cases—Nos. 3, 4, 6, 18, 19, 20, 21, 23, 24, 26, 28, 30, 35, 48, 52.

In one of these operation was refused (No. 18) on account of the lung condition (phthisis), and in another (No. 26) the patient refused to have anything done. A third had already been operated on in a similar institution (No. 35), and was considered unfit for further operative interference.

The routine line of treatment adopted in all cases on admission was that of extension by weight and pulley.

The stirrup was fixed to the leg alone by adhesive plaster and bandage, and the weight suspended in the usual way over a pulley.

The lower end of the bed was raised. The amount of weight varied, of course, with the age of the patient, from 1 lb. to 5 lb. in children, and from 3 lb. to 8 lb. in the adult.

No attempt was made to employ extension at first in the position of the limb: the limb was at once extended in a line with the body.

This is contrary, I am aware, to the teaching of Howard Marsh and others, and may have accounted for the greater frequency of abscess.

Extension never failed to afford some relief, no matter what stage of the disease.

In the cases, then, where no operation was performed, and which might be considered to have permanently improved by extension alone, there remained out of the 15 cases 12; their condition on dismissal and condition at present will be found under these respective headings.

*Condition on dismissal* (Table No. V).—With the exception of the three cases already noted (Nos. 18, 26, 35) which were dismissed *in statu quo*, there was marked improvement on dismissal.

All were treated by extension while resident in the hospital, and all were dismissed wearing a Thomas' splint, a patten on the sound limb, and granted the use of a crutch.

A recommendation was given to get about only with the aid of the crutch and splint for a period of six months.

*Condition at present* (September, 1900) (Table No. V).—In three cases (Nos. 28, 48, 52) the condition at present was found eminently satisfactory; there was no shortening, no wasting, and no restriction in movement, proof of the fact that it is possible for the hip-joint to be the seat of tubercular disease and yet entirely recover.

In one case (No. 4) an abscess formed, discharged for some time, but now soundly healed. The limb was straight, but with some ankylosis. There was an inch shortening; the thigh was 3 inches less in circumference than the sound limb;

the calves were equal. In another case (No. 6) the hip became worse after dismissal, and was amputated in the Royal Infirmary within a year after dismissal from the Victoria. He is now in fair health and at work.

In the case which refused treatment (No. 26), the sinuses are still discharging (six and a half years since dismissal). The thigh is flexed, the hip ankylosed. The amount of shortening is  $4\frac{1}{2}$  inches; the thigh is  $2\frac{1}{2}$  inches, the calf 2 inches less in circumference than the sound limb.

Three cases died (Nos. 18, 21, 35)—No. 18 of phthisis, Nos. 21 and 35 of a cause unknown. Nos. 18 and 35 were dismissed in an unsatisfactory state.

No trace could be found of the remaining six cases.

Summary of no operation cases—15.

Perfect result,	.	.	.	.	.	.	3 cases.
Good result,	.	.	.	.	.	.	1 case.
Amputation,	.	.	.	.	.	.	1 „
Refused treatment,	.	.	.	.	.	.	1 „
Died,	.	.	.	.	.	.	3 cases.
Not found,	.	.	.	.	.	.	6 „

Average length of time since dismissal of cases found, 6 years.

Average amount of shortening, roughly, 1 inch.

## 2. *Abscess alone opened*—9 cases.

In nine cases—Nos. 5, 8, 9, 10, 11, 12, 15, 22, 27—abscess was alone opened, further operative interference (excision) becoming unnecessary.

This does not include those cases where the evacuation of an abscess preceded excision, nor where abscess formed subsequent to excision; these are classified under the heading of excision.

The abscess was freely opened and drained.

In two cases (Nos. 8 and 10) the lung condition precluded further operative treatment.

*Condition on dismissal* (Table No. V).—The abscess wound was healed on admission in four out of the nine cases (Nos. 5, 8 (first dismissal), 9, 27), and was almost healed in another (No. 15). In the remaining cases (Nos. 8, 10, 11, 12) there was a discharging sinus on dismissal, Case No. 12 alone being improved in general health. Cases No. 8 and 10 had well-marked evidence of phthisis; Case No. 2 was dismissed as on admission; Case No. 22 died in the hospital of what was supposed to be septicæmia.

*Condition at present* (September, 1900) (Table No. V).

—Of the cases where the abscess wound was healed on dismissal, two (Nos. 5 and 27) remained healed. Case No. 8 died of phthisis. In Case No. 9 the wound broke down, but soon healed again. In Case No. 15 the sinus closed soon after dismissal.

Of the cases with sinus on dismissal—No. 10 died of phthisis; No. 11 was not found; No. 12, old sinus closed, but fresh sinus formed in ischio-rectal region.

*Amount of movement.*—The amount of movement was considered very satisfactory in one (No. 27); good in one (No. 5). There was some ankylosis in No. 15, but the leg was straight. In No. 12 the hip was ankylosed and flexed.

*Amount of shortening.*—The amount of shortening was, roughly, 2 inches; the thigh 2 inches, and the calf half an inch less in circumference than the sound limb.

Average length of time since dismissal—Over seven years.

Summary of abscess alone opened—9 cases.

Perfect result,	.	.	.	.	.	.	3 cases.
Died,	.	.	.	.	.	.	3 „
Hip ankylosed,	.	.	.	.	.	.	2 „
Not found,	.	.	.	.	.	.	1 case.

### 3. *Excision*—44 cases.

In forty-four cases excision of the joint was performed; in one case, both hip-joints; making a total of forty-five excisions.

Where the disease was in an advanced state on the first admission, excision was, as a routine practice, performed after a period of rest, extension, and preparation; but in the great majority of the later cases excision was not performed until the second admission, which, in spite of great improvement, with extension, advice as to getting about only with crutches, Thomas' splint, and patten, we began to look upon as a certainty.

*Nature of operation.*—The external method was adopted in every case, with the line of incision curved backwards in the direction of the fibres of the gluteus maximus, as advised and practised by Kocher.

The length of incision in children rarely exceeded  $2\frac{1}{2}$  inches.

A thin layer of cartilage was, in children, reflected with the soft tissues from the trochanter.

The neck of the bone was usually divided *in situ*, preferably by knife in children and chisel in the adult, and to begin with at the anatomical neck.

The synovial membrane was freely cut away.

The remaining cavity was flushed out with 1 in 80 carbolic acid, and thoroughly dried.

Iodoform and boracic powder was freely rubbed into the raw surface.

A drainage-tube was used for the first forty-eight hours.

The deep tissues were brought together and fixed with catgut.

No splint; extension alone applied.

In the earlier cases a far greater endeavour was made to thoroughly remove and get beyond the disease. The resulting cavity was left open and stuffed from the bottom: the result was often a septic sinus. If one could only be certain of obtaining in every case primary union, and the prevention, in consequence, of a mixed infection, one could safely allow nature to encapsulate or otherwise residualise any tubercular material left.

#### *Situation of the disease (Table No. IV).*

(a) *Epiphysis—Femur.*—In almost exactly a half of the excision cases (22) the disease was considered to have originated at the upper epiphyseal line of the femur: in cases Nos. 9 and 12 it was similarly situated, but the joint was not excised (see under abscess alone opened).

The neck of the femur is ossified from the centre for the shaft, and the situation of the epiphyseal line practically corresponds to what may be termed the anatomical neck of the bone.

We confess the difficulty of being absolutely certain as to the precise seat of origin of the mischief in some of the cases, and the following arrangement must therefore be accepted with that reservation.

In most of the cases, however, tabulated as having arisen at the upper femoral epiphysis, there was strong presumptive evidence towards that view.

In five cases (Nos. 1, 14, 29, 38, 66) the head of the femur was completely separated and lying loose in the acetabulum; in two (Nos. 1 and 14) it was dislocated backwards—pathological dislocation.

In eight cases (Nos. 7, 13, 39, 44, 49, 51, 61, 64) it was partly absorbed; in one (No. 40) completely so.



In three cases (Nos. 44, 49, 51) the head was partly absorbed and glued to the acetabulum—fibrous ankylosis.

In cases Nos. 9, 12, 29, 32, 39, 53 (subsequent to operation), 57, 69—eight cases—the neck was carious or contained a carious focus below the epiphyseal line.

In every instance the head was in part eroded, destitute of its articular cartilage in places, and the bone itself either carious or fatty. In a proportion the acetabulum shared in the involvement, being in part eroded, in some carious, in one perforated.

In the majority of the cases the synovial membrane was pulpy, in six (Nos. 14, 44, 49, 51, 61, 69) it was fibrous undergoing organisation.

(b) *Acetabulum*.—In ten cases (Nos. 17, 25, 43, 45, 50, 56, 59, 62, 65), the acetabulum was regarded as the primary seat of the disease.

This was to a certain extent a matter of conjecture, but we think the conclusion warranted from the facts that in none of the ten cases above quoted was the femoral epiphysis affected, that in six the acetabulum was perforated, and in the remaining four carious, especially at a point corresponding to the position of the Y-shaped cartilage—the bone, in fact, in one case separated as a sequestrum (No. 59).

In every case the membrane was pulpy; this was but a natural sequence, considering the advanced state of the disease in the acetabulum.

The femoral head was in several of the cases eroded, but in none carious.

(c) *Synovial membrane*.—In the remaining thirteen cases (Nos. 36, 37, 41, 46, 47, 54, 55, 58, 60, 63, 65b, 67, 70) the synovial membrane was regarded as the seat of the mischief if only for the reason that there was no evidence of disease in the femoral epiphysis or in the acetabulum.

The membrane was in each case in an advanced state of pulpy degeneration.

The articular surfaces of the head and acetabulum were in places eroded, but contained no carious or caseous focus.

The head in some was fatty.

It is quite possible, however, that the membrane was secondarily infected, even although there was no direct evidence of the source of its infection; the writer is under the conviction that in the majority of cases, if not in all, the original source is in the epiphysis.

*Amount of bone removed*.—In nine cases the head was

alone removed, the line of section corresponding practically to the line of the epiphysis; in nineteen the line of section was through the neck to a variable length below the epiphyseal line; in sixteen the line of division was through the trochanter.

The amount of bone removed depended upon the situation and extent of the disease.

As the earlier cases were treated by the open method, more bone was removed than was absolutely necessary to rid the patient of the disease.

*Amputation.*—In two (Nos. 2 and 33) the limb was amputated at the hip in both subsequent to excision; in a third amputation was advised and refused by the patient.

In the two cases where amputation was resorted to, there was an advanced degree of sepsis; the acetabulum was in each case perforated with a resulting intra-pelvic collection. In the third case amputation was thought advisable on account of the lung condition.

#### *Condition on dismissal (Table No. V).*

(a) *Epiphyseal cases (24)*—*Wound healed.*—In nine cases (Nos. 9 (joint not excised), 13, 16, 38, 51 (first dismissal), 57, 61, 64, 66) the excision wound was healed on dismissal, and any sinus or sinuses present on admission closed.

In all of these the general health was greatly improved; all were dismissed wearing a Thomas' splint, with directions to return at end of six months and report.

It may here be stated, however, that, like the ungrateful lepers in the parable, very few returned to report or express their gratitude.

*Sinus or sinuses on dismissal.*—In eleven cases (Nos. 1, 7, 12 (joint not excised), 29, 32, 39, 40, 44, 51 (second dismissal), 53, 68) there was on dismissal a discharging sinus or sinuses either at excision wound or elsewhere.

In three cases (Nos. 32, 40, 44) the sinus was quite superficial and all but healed.

All were improved, and dismissed wearing a Thomas' splint.

Three cases (Nos. 49, 68, 69) were at time of writing in the hospital as readmissions, two (Nos. 49, 69) not having previously been operated upon.

In one (No. 2) the limb was amputated at the hip, and was dismissed with wound not quite healed, but greatly improved in his general health.

Two died in hospital (Nos. 14, 42), both of tubercular meningitis.

# Summary of epiphyseal cases on dismissal—

Cases healed on dismissal, . . . . .	9
Cases with sinuses or sinus on dismissal, . . . . .	11
Amputation case, . . . . .	1
In hospital, . . . . .	2
Died, . . . . .	2

Twenty-five cases, No. 51 being counted twice.

*Condition at present* (September, 1900) (Table No. V).

(a) *Epiphyseal cases* (24)—*Wound healed*.—Of the nine cases dismissed with the wound healed, four (Nos. 16, 38, 57, 61) remained healed. In one (No. 9, see under abscess alone opened) the sinus broke down, discharged for a time, but was now quite healed. In two (Nos. 64, 66) there was present a slight discharge, which apparently did not affect the health of either patient. One case (No. 13) was not found.

*Sinus or sinuses*.—Of the eleven cases dismissed with a discharging sinus or sinuses, the excision wound or sinus was found healed in seven (Nos. 7, 12, 32, 40, 44, 51, 69), the sinus closing in periods varying from a few weeks to four months. There was found a discharging sinus in five cases (Nos. 1, 39, 49, 53, 68), including the two cases noted as in hospital under the heading of condition on dismissal.

In case No. 1, the sinus has discharged more or less since dismissal, ten years ago: there is no evidence of amyloid disease. In case No. 39 the discharge is small in amount and the sinus a mere pin-hole. Case No. 49 is at present in hospital; wound is healing. Case No. 53, the sinus is discharging copiously, and there is evidence of amyloid disease. In case No. 68 the discharge is slight. Case No. 29 was not found.

## Summary of epiphyseal cases at present:—

Healed, . . . . .	12 cases.
Sinus or sinuses, . . . . .	7 „
Not found, . . . . .	2 „
Amputation, . . . . .	1 case.
Died, . . . . .	2 cases.
	—
	24 cases.

*The amount of movement*.—The amount of movement at the hip is taken apart from the existence or otherwise of a sinus, and is arranged under three headings, thus:—(a) Where

TABLE No. VI.  
AMOUNT OF SHORTENING—HOW CORRECTED—IF DEAD, CAUSE.

No.	AMOUNT OF SHORTENING.	HOW CORRECTED.	IF DEAD, CAUSE.
1	5 inches. Thigh 5½ inches, calf 3¾ inches, less in circumference than sound limb.	Does not place foot on ground. Uses crutch constantly.	...
2	Amputation case.	...	...
3	Not found.	...	...
4	1 inch. Thigh 3 inches less in circumference; legs equal.	Wears thick soled boot and uses stick. Limp not apparent.	...
5	4½ inches. Thigh 4 inches, leg 1 inch, less in circumference.	Patten 4½ inches in length. With patten, no limp.	...
6	Amputation case.	...	...
7	5 inches. Thigh 4½ inches, leg 2 inches, less in circumference.	Patten. Without patten by a position of talipes equinus.	...
8	...	...	Died seven years ago. "Gradual wasting."
9	None. Thigh 1 inch, calf ½ inch, less in circumference.	...	...
10	...	...	Died seven years ago. "Wasting."

11	Not found.	...	...	...
12	2½ inches. Thigh 1½ inch, calf ½ inch, less in circumference.	...	...	...
13	Not found.	...	...	...
14	...	...	...	Died in hospital. "Tubercular meningitis."
15	½ inch. Thigh 2 inches less, calf equal, in circumference.	...	...	...
16	2½ inches. Thigh 3¾ inches, calf ½ inch, less in circumference.	...	...	...
17	2¾ inches. Thigh 3¾ inches, calf 1½ inch, less in circumference.	...	...	...
18	...	...	...	Died of phthisis pulmonalis.
19	Not found.	...	...	...
20	Not found.	...	...	...
21	...	...	...	Died in City Hospital seven years ago; cause unknown.
22	...	...	...	Died in Victoria Infirmary, seven and a half years ago. Thought to be from septic poisoning; no brain mischief found <i>post-mortem</i> .
23	Not found.	...	...	...



TABLE No. VI (*continued*).  
AMOUNT OF SHORTENING—HOW CORRECTED—IF DEAD, CAUSE.

No.	AMOUNT OF SHORTENING.	HOW CORRECTED.	IF DEAD, CAUSE.
24	Not found.	..	...
25	...	...	Died 5th May, 1894. "Exhaustion."
26	4½ inches. Thigh 2¼ inches, calf 2 inches, less in circumference.	Walks with stilt. Does not put limb to the ground.	...
27	None.	Not lame. Has had no symptoms since dismissal.	...
28	None.	No lameness. Has had no symptoms since.	...
29	Not found.	...	...
30	Not found.	...	...
31	Not found.	..	...
32	5¼ inches. Thigh 2 inches, calf 1 inch, less in circumference.	Patten. Walks quite straight.	...
33	...	...	Died in Paisley Poorhouse Infirmary, about a year ago, of consumption. Wound was quite healed up several years ago. A sister is at present ill with "decline of the bowels." Patient had been neglected after he came home from Victoria Infirmary.

34	1½ inch. Thigh 1¼ inch, calf 1 inch, less in circumference.	Slight limp. Runs about actively.	...
35	...	...	Probably dead.
36	(See note, Table No. V.)	...	...
37	3¼ inches. Thigh ¾ inch, calf ½ inch, less in circumference.	Thick soled boot. No lameness apparent with boot.	...
38	2 inches. Thigh ½ inch, calf ¾ inch, less in circumference.	Has no correcting sole; walks with considerable limp. (See Table No. V.)	...
39	4 inches. Thigh 3½ inches, calf 1 inch, less in circumference.	(See Table No. V.)	...
40	3¾ inches. Thigh 4½ inches, calf ¾ inch, less in circumference.	Thick sole. No limp apparent with boot.	...
41	...	...	Probably dead.
42	...	...	Died 14th January, 1897. Tubercular meningitis.
43	1½ inch. Thigh 1½ inch less in circumference; calves same.	Uses no correction. Walks with limp.	...
44	1 inch. Thigh 2½ inches, calf ¼ inch, less in circumference.	Uses thick sole. Very slightly lame. (See Table No. V.)	...

TABLE No. VI (*continued*).  
AMOUNT OF SHORTENING—HOW CORRECTED—IF DEAD, CAUSE.

No.	AMOUNT OF SHORTENING.	HOW CORRECTED.	IF DEAD, CAUSE.
45	...	...	Died three years ago, after being home only a short time. He had several bedsores and sinuses, and wasted away.
46	Not found.	...	...
47	3½ inches. Thigh 3 inches, calf 2 inches, less in circumference.	Uses crutch. Can use limb, but is afraid.	...
48	None. No wasting.	No lameness.	...
49	At present under treatment.	...	...
50	2½ inches. Thigh 2¾ inches, calf 1¼ inch, less in circumference.	Patten. Uses crutch. Leg weak.	...
51	3 inches. Thigh 2½ inches, calf 1¼ inch, less in circumference.	Thick cork sole. Walking stick.	...
52	None. No wasting.	No lameness.	..
53	3½ inches. Thigh 2 inches, calf 1 inch, less in circumference.	Goes about with crutch.	...
54	1 inch. Thigh ½ inch less in circumference; calves equal.	Has not yet got thick-soled boot. Runs about with foot in position of equinus.	..

55	$\frac{3}{4}$ inch.	At present under treatment.	...
56	$1\frac{1}{2}$ inch. Thigh $\frac{3}{4}$ inch, calf $\frac{3}{4}$ inch, less in circumference.	Uses crutch. Is afraid to use limb.	...
57	1 inch. Thigh 1 inch, calf $\frac{1}{2}$ inch, less in circumference.	Walks with limp.	...
58	1 inch. Thigh 1 inch, calf $\frac{1}{4}$ inch, less in circumference.	Goes about a little on crutches.	...
59	$1\frac{3}{4}$ inches. Thigh 2 inches, calf 1 inch, less in circumference.	Uses crutches.	...
60	$\frac{3}{4}$ inch. Thigh 1 inch, calf $\frac{1}{2}$ inch, less in circumference.	Able to run about without aid. Limps.	...
61	1 inch. Thigh 1 inch, calf $\frac{3}{4}$ inch, less in circumference.	Wearing splint. Gets about with crutch and patten.	...
62	$1\frac{1}{2}$ inch. Thigh $1\frac{3}{4}$ inch, calf $\frac{1}{4}$ inch, less in circumference.	Does not use crutch now except on going out. Slight limp without it.	...
63	2 inches. Thigh and calf not measured.	Just dismissed. Wearing Thomas' splint. Gets about on crutches.	...
64	$1\frac{1}{2}$ inch. Thigh $\frac{3}{4}$ inch, calf $\frac{1}{2}$ inch, less in circumference.	At present in hospital.	...

TABLE No. VI (*continued*).  
AMOUNT OF SHORTENING—HOW CORRECTED—IF DEAD, CAUSE.

No.	AMOUNT OF SHORTENING.	HOW CORRECTED.	IF DEAD, CAUSE.
65	Double excision., Equal length.	At present in hospital.	...
66	None.	Wearing Thomas' splint. Uses crutch and patten.	...
67	None.	Wearing Thomas' splint. Uses crutch and patten.	...
68	None.	Wearing Thomas' splint. Uses crutch and patten.	...
69	$\frac{1}{2}$ inch.	Wearing Thomas' splint. Uses crutch and patten.	...
70	$\frac{1}{2}$ inch.	At present in hospital.	...



the amount of movement was so little restricted, for there was in every case a certain amount of restriction, as to prevent the patient from placing the heel of the affected limb on the sound knee, and from kissing the knee on the affected side. This amount of movement was considered very satisfactory, and was found in eight cases (Nos. 1, 7, 9, 32, 38, 57, 61, 66). No. 1 is a tailor and sits cross-legged with no discomfort. No. 32 uses her foot as a machinist, and is able to earn her living. (b) Where the movement is free but within certain limits, not being able to fulfil the conditions of (a), but with no fixation at the joint. This amount of movement was considered good, and was present in eight cases (Nos. 12, 16, 40, 44, 51, 64, 68, 69); Nos. 68, 69 are recent cases and may yet have freer movement. In No. 12 the joint was not excised. (c) Where there was fixation at the joint amounting to a condition of fibrous ankylosis. This was found in two cases (Nos. 39, 53). Cases Nos. 13 and 29 were not found, and Case No. 49 was still under treatment.

Summary — amount of movement; excision, epiphyseal cases:—

Movement very satisfactory,	.	.	.	.	.	8 cases.
Movement good,	.	.	.	.	.	8 "
Fibrous ankylosis,	.	.	.	.	.	2 "
Under treatment,	.	.	.	.	.	1 case.
Not found,	.	.	.	.	.	2 cases.
Amputation,	.	.	.	.	.	1 case.
Died,	.	.	.	.	.	2 cases.
						—
						24 cases.

*Length of time since dismissal.*—This varies from ten years to a case just dismissed. The average length of time since dismissal, five years.

*Amount of shortening* (Table No. VI).—The average amount of shortening in these (epiphyseal) cases is about  $2\frac{1}{2}$  inches; the circumferential measurement of the thigh  $2\frac{1}{2}$  inches, and of the calf, 1 inch less than that of the sound limb.

*How corrected* (Table No. VI).—No correction in three (Nos. 16, 38, 57), walks with limp; thick sole in three (Nos. 40, 44, 51), no limp; patten in two (Nos. 7, 32), without patten talipes equinus; crutch limb not put to ground, in two (Nos. 1, 53); stick alone (No. 16); Thomas' splint, crutch, and patten in four (recent cases, Nos. 61, 66, 68, 69).

*Condition on dismissal* (Table No. V).

(b) *Acetabulum cases* (10)—*Wound healed*.—Of the ten cases, two (Nos. 43 and 62) were dismissed with the excision wound healed, and any sinus or sinuses present on admission closed.

*Sinus or sinuses*.—Seven were dismissed with a discharging sinus or sinuses (Nos. 17, 33, 45, 50, 56, 59, 65, right hip).

With the exception of one case (No. 45) the general health on dismissal was much improved, and the sinus likely to close.

In case No. 45 the granulations were unhealthy, probably tubercular, and the general condition poor.

One died in hospital (No. 25) of exhaustion.

*Condition at present* (September, 1900) (Table No. V).

(b) *Acetabulum cases* (10)—*Wound healed*.—The two cases (Nos. 43 and 62) dismissed with the wound healed remained so, and, in addition, Cases No. 17, 59, 65 (right hip) which were dismissed with a sinus or sinuses were found healed, the sinus closing in periods varying from a few months to a year after dismissal.

*Sinus or sinuses*.—In two (Nos. 50 and 56) there is still a discharging sinus, in one (No. 50) very slight, in No. 56 considerable at times.

Two cases died after leaving the hospital (Nos. 33 and 45); both died of phthisis.

Summary of acetabular cases at present :—

Healed,	.	.	.	.	.	.	.	5 cases.
Sinus,	.	.	.	.	.	.	.	2 "
Died,	.	.	.	.	.	.	.	2 "
In hospital,	.	.	.	.	.	.	.	1 case.
								—
								10 cases.

*Amount of movement*—*Acetabular cases*.—Very satisfactory in two cases (Nos. 43 and 50). Good in five cases (Nos. 17, 56, 59, 62, 65); No. 56 nearly good enough to come into the first column.

*Length of time since dismissal*.—Average nearly three years.

*Amount of shortening* (Table No. VI).—Average nearly 2 inches; circumferential measurement of the thigh, 2½ inches, and of calf, 1 inch less than in sound limb.

*How corrected*.—Not corrected in one (No. 43), limp; thick sole in one (No. 17), no limp; patten in one (No 50); crutch in three (Nos. 56, 59, 62), in latter only for safety.

*Condition on dismissal* (Table No. V).

(c) *Synovial cases* (13)—*Wound healed*.—In seven cases (Nos. 36, 37, 46, 47, 55, 67, 70) the excision wound or sinus was healed on dismissal, and in two additional cases (Nos. 46 and 47) practically but not absolutely so.

*Sinus or sinuses*.—In the remaining five cases (Nos. 41, 54, 58, 60, 63, 65) there was a discharging sinus or sinuses. All were in good condition on dismissal, with the exception of No. 41, where the granulations were unhealthy and sluggish. All were dismissed wearing a Thomas' splint.

*Condition at present* (September, 1900) (Table No. V).

*Wound healed*.—All the cases dismissed as healed remained so with the exception of No. 55. The splint in this case was discarded too soon, and the joint freely used. An abscess formed, and there is now a discharging sinus.

In two, however, the opposite hip has become affected (Nos. 36 and 65)—in No. 36, three months after dismissal; and in the other (No. 65), "a few months."

*Sinus or sinuses*.—Three cases (Nos. 54, 60, 65), which were dismissed with a discharging sinus, were found healed; in two (Nos. 58 and 63) a sinus still persists. One case (No. 41) cause unknown. One case not found (No. 46).

*Summary of synovial cases at present*:—

Healed, . . . . .	8 cases.
Sinus or sinuses, . . . . .	3 „
Died, . . . . .	1 case.
Not found, . . . . .	1 „
	—
	13 cases.

*Amount of movement*—*Synovial cases*.—Very satisfactory in five cases (Nos. 36, 37, 54, 55, 60). Good in six cases (Nos. 47, 58, 63, 65, 67, 70); Nos. 63, 67, and 70 were just dismissed or in hospital. No. 41 died; No. 46 not found.

*Length of time since dismissal*.—Average two years.

*Amount of shortening* (Table No. VI).—Average about  $2\frac{1}{4}$  inches; thigh,  $1\frac{1}{2}$  inch, and of calf, three-quarters of an inch less in circumference than in sound limb.

*How corrected* (Table No. VI).—Not corrected in two cases (Nos. 54 and 60), run about with limp; sole in one (No. 37); crutch (No. 47); can use limb (No. 58); Thomas', patten, and crutch, in two (Nos. 63 and 67), both recently dismissed.

*Excision cases as a whole*.—Taking the excision cases as a

whole, independently of the situation of the disease, there were—Healed on dismissal, 18 cases; sinuses or sinus on dismissal, 23—a total of 41 cases excluding the deaths. Healed at present, 26 cases; sinus or sinuses at present, 13 cases—excluding the cases which have died since dismissal and the cases not found—a total of 31 cases.

*Amount of movement (cases as a whole)—*

	VERY SATISFACTORY.	GOOD.	ANKYLOSIS.
No operation, . . . .	3	...	2
Abscess alone opened, . .	1	1	2
Excisions, . . . .	16	19	2
	<hr/> 20	<hr/> 20	<hr/> 6

*Average shortening (cases as a whole)—*

No operation cases, . . . . .	1 inch.
Abscess alone opened, . . . . .	2 inches.
Excision cases, . . . . .	2 $\frac{1}{4}$ "

*Number of deaths and cause* (Table No. VI).—Of the seventy cases there fall to be recorded twelve deaths—four in the hospital and eight outside.

Of the four in the hospital (Nos. 14, 22, 25, 42)—No. 14 (excision—epiphysis femur), tubercular meningitis; No. 22 (abscess alone opened), septicæmia (?), nothing found *post mortem*; No. 25 (excision—acetabulum), exhaustion; No. 42 (excision—epiphysis femur), tubercular meningitis.

Of the eight cases outside hospital—No. 8 (abscess alone opened), phthisis pulmonalis; No. 10 (abscess alone opened), phthisis pulmonalis; No. 18 (no operation), phthisis pulmonalis; No. 21 (no operation), cause unknown; No. 33 (excision—acetabulum), phthisis pulmonalis; No. 35 (excision—Sick Children's Hospital), cause unknown; No. 41 (excision—synovial membrane), cause unknown; No. 45 (excision—acetabulum), "wasting," phthisis pulmonalis (?).

*Summary—*

Phthisis pulmonalis, . . . .	5 cases (one doubtful).
Tubercular meningitis, . . . .	2 cases.
Exhaustion, . . . . .	1 case.
Septicæmia, . . . . .	1 "
Cause unknown, . . . . .	3 cases.

### CONCLUSIONS.

It is taken that the following conclusions are warranted from the foregoing facts:—

1. That the average age of onset is on or about the fifth year, and when it occurs later in life it is often a lighting up of an old mischief of childhood.

2. That there is little difference as to the liability of one hip to be involved more than the other, or of one sex more than the other.

3. That in a large proportion of cases there is a history of injury, mostly direct, and of a trivial character.

4. That fixation of the affected joint, involving an amount of restricted movement and degree of lameness commensurate with the state of advancement of the disease, is one of the most valuable signs at any stage of the disease, and one of the most easily recognised signs of early hip mischief.

5. That a perfect result, as regards movement, wasting, shortening, and subsequent usefulness of the limb, is only possible if the case is treated from the first by prolonged rest and extension.

6. That in the class from which our patients are drawn any prolonged system of treatment at their own homes is out of the question.

7. That under our present system of hospital arrangement, a line of treatment has to be adopted which is more mutilative than would be necessary if these cases were treated in a special hospital for these cases and for these cases alone.

8. That it may be granted that excision of the joint hastens the cure of the condition in some cases, but does so at the expense of the length of the limb.

9. That in the operation of excision it is impossible to be quite satisfied that every focus of tubercular material has been removed, but may be left with impunity if the element of sepsis be not introduced.

10. That given the same disorganisation of the joint, and treated without excision, there is greater likelihood of firm fixation at the joint, with the possibility of such fixation being in a false position requiring a subsequent osteotomy for its correction.

11. That the amount of movement after excision is one of its most satisfactory results.

12. That the average amount of shortening after excision is not very much more than where the disease has advanced to the stage of disorganisation and abscess alone opened.



13. That a special hospital for tubercular disease of the hip-joint in children would be a great advantage to the patient, for the following reasons:—(a) It would enable early cases to have that prolonged rest and treatment which they cannot get at a general infirmary. (b) There would not, therefore, be so frequently that state of disorganisation of the joint requiring the radical measures at present practised. (c) Supposing such should occur, they could get the prolonged care that would ensure ankylosis taking place in a straight position. And would further benefit the general infirmary by (a) removing an important group of chronic cases, (b) removing a source of infection—septic and tubercular.

14. That such an hospital has proved a great success in London, and has received the support of many of the most eminent surgeons, notably of Sir Henry Thomson, Mr. Holms, and Mr. Prescott Hewett, each of whom has written specially in its favour.

By the kindness of Mr. James Berry, one of the surgeons, I was enabled to see some of the work at the Alexandra Hospital for Hip Disease in London. It is the only hospital of its kind in Britain. It was opened in 1867, with ten beds. The new hospital just completed has accomodation for sixty patients, in addition to isolation wards capable of providing for ten children. The out-patient department is particularly well managed; cases when they leave the hospital are attended at their own homes, and brought back at once if occasion requires. There were over 2,000 attendances last year; the individual attendance was 350 cases. There is also a convalescent home at Painswick, containing eight beds. No case is excised. Abscess when formed is alone dealt with, and may require aspiration three or four times. During the past year, 65 cases were treated in the hospital; of these 8 were discharged cured, 15 were improved (these still attend from time to time to be seen by the surgeon, and, in addition, visited at their own homes by the nurse), 1 was transferred to a general infirmary, 16 were sent to convalescent home, 25 were still under treatment. The average length of time in the hospital is five months. Children are alone admitted—girls between 3 and 12, and boys between 3 and 11.

*Cost and upkeep.*—The new Alexandra, just completed, cost (including furnishing) £20,000. The annual expenditure in upkeep is £3,000. It takes £30 a year to maintain a cot. £1,000 endows a cot in perpetuity. A payment of 4s. 2d.

weekly is required from each child, unless occupying an endowed cot, of which there are several.

I think you will agree with me that such a hospital would be a great boon, and, if so, why should the second city of the Empire lag behind?

I cannot close this article without expressing my gratitude to Mr. Maylard for his kindness in allowing me to make use of these cases, for his never failing courtesy, and for his help and encouragement in any surgical undertaking.

### III.—NOTES ON A CASE OF EMPYEMA OF THE GALL-BLADDER.

BY DR. ALFRED YOUNG.

L. P., a boy of 6 years of age, came under my care at the Sick Children's Dispensary on 3rd July, 1900, with a large swelling in the right hypochondriac and right half of the epigastric regions. The swelling measured superficially about 5 inches from the middle abdominal line outwards to the right, and about  $4\frac{1}{2}$  inches from the costal margin downwards. The skin over it was unaltered, except over a small area midway between the umbilicus and the ensiform cartilage, where it was thinned and reddened. Fluctuation could be made out, and I came to the conclusion that I had to do with an abscess, pointing in the middle line of the abdomen, extending outwards to the right beneath the abdominal muscles, and situated probably within the abdominal cavity. The lower border of the liver could not be felt, but with the abdominal muscles relaxed I could define and palpate the lower limit of the swelling, and it appeared to pass backwards under the liver, and to be situated inside the abdominal cavity rather than in the parietes.

There was no fever, and the swelling was not accompanied by much pain.

The history of the case was that about three weeks before a small lump appeared below the right costal margin, situated near to the ninth costal cartilage. The mother thought it had been caused by a blow, but on inquiry no definite history of injury could be obtained. There had been no pain at first, except on vigorous movement or rough handling; but, as the swelling gradually got bigger and approached the middle line, the pain became more constant, and poultices were applied. There had been no rigors, no shivering fits, and no jaundice, nor any symptoms pointing to the presence of gall-stones.

I could not be sure whether the abscess was connected with the gall-bladder or not, but as it was on the point of bursting I determined to open it. Chloroform was given, and a very small incision made in the mid abdominal line where the abscess was pointing. A large quantity of greenish pus, thick at first and more watery afterwards, was evacuated, and a probe was passed down to the under surface of the liver to about the situation of the gall-bladder. A drainage-tube was then inserted, and dressing applied.

Some of the pus was collected in a sterilised drainage-tube, and next day there stood at the top of the tube about two inches of clear, greenish viscid fluid. On examination, no organisms could be seen with the microscope, and no cultures could be obtained from the pus. The pus cells were markedly fatty. Much mucin was present, and the colour reactions of bile were obtained from the fluid.

On 5th July (two days after operation) the drainage-tube was removed as there was very little discharge, and I was in hopes that the small wound would heal up, and allow of any further treatment in regard to the gall-bladder being postponed to a more convenient season. On 8th July the wound had closed.

Unfortunately, about a week after the operation, the patient developed measles at home. A dressing was applied by the Sister, and the friends were instructed not to remove it. The child evidently suffered from severe catarrhal symptoms during the course of the measles, and the mother, applying hot poultices with more vigour than discretion, scalded the tender skin over the area where the abscess had been opened, giving rise to sloughing and ulceration.

By the beginning of August the patient had recovered from measles, and the condition of the surface of the abdomen in the region of the wound had been much improved by boracic dressing.

On 24th August the patient was admitted to Ward XI of the Western Infirmary, where I was taking duty for Dr. Beatson. There was a granulating surface in the epigastric region, surrounded by cicatricial tissue. This area healed up in about ten days, but a minute sinus, situated about an inch to the right of the middle line, persisted. This was dressed every few days with plain sterilised gauze, and the small amount of discharge collected in the dressing was examined from time to time and found to contain mucin, but no bile. About the end of September I passed a fine probe

into the sinus down to the under surface of the liver, and afterwards with a very fine sharp spoon scraped the walls of the sinus. A few days afterwards the patient had a well-marked attack of jaundice, which lasted two days, and passed off. It was unaccompanied by any pain or fever. The sinus soon closed, and the patient was dismissed well about the middle of November. It was not deemed advisable to subject him to any further operative treatment, as he appeared to be so well, and suffered from no pain, fever, or jaundice.

In the absence of any definite cause for this affection of the gall-bladder, I can only suggest that there was some catarrhal condition of the cystic duct or gall-bladder leading to obstruction of the duct and the subsequent empyema. There was no evidence of gall-stones being present, although that, of course, is a possible explanation of the state of matters. The hepatic and common bile-ducts appear to have remained unaffected, or at least not affected to any great extent, except after the probing of the sinus in September, when a transient jaundice occurred. The cystic duct has now either become pervious, or the gall-bladder become obliterated.

[26th January, 1901.—The patient was seen to-day, and has been in excellent health since leaving the hospital. There is a weak cicatrix in the epigastrium and right hypochondrium, about an inch and a half square, and its outer aspect appears to be adherent to the liver. There is a slight tendency to hernia, through the scar in the mid abdominal line, but otherwise the patient is very well. No swelling in the region of the gall-bladder can be detected. This unfortunate hernial condition, I think, is largely to be accounted for by the accident with the poultices.]

*Dr. Carslaw* spoke of the absence of jaundice in this case, except after the scraping out of a sinus. He agreed that it was likely that a gall-stone had been present, and that the original condition had been one of catarrh of the cystic duct, leaving the common bile-duct free. The transient attack of jaundice had, no doubt, resulted from some inflammatory disturbance involving the bile-ducts. *Dr. Young* was to be complimented on the success of his treatment of the case, in spite of the incidents which had disturbed its progress.



IV.—DAILY CEREBELLAR VOMITING OF SIX MONTHS' DURATION  
DUE TO A COLUMNAR-CELLED ADENOMA OF THE CEREBELLUM INVOLVING THE FOURTH VENTRICLE.

BY DR. J. LINDSAY STEVEN.

The specimen which I present for your examination to-night is an irregular mass involving both lobes of the cerebellum, and extending to the fourth ventricle. It is thus described by Dr. Charles Workman, who performed the *post-mortem* examination:—"The tumour involves the fourth ventricle, and occupies both lobes of the cerebellum, but mostly the left, and comes into view in front to the left of the medulla oblongata. After careful examination, I am unable to say from what part the tumour has originated. Sections of a portion of the growth have been cut by the freezing method, and these show that the tumour has the structure, for the most part, of a columnar-celled adenoma, probably arising from the ependyma of the ventricle. The portion of the tumour which comes to the surface to the left of the medulla has undergone some necrosis, apparently caseous." Such is Dr. Workman's account of the pathology of the tumour, and with the single remark that, in my experience, and I believe also in his, primary columnar-celled adenoma of the cerebellum is a rare form of neoplasm, I leave the specimen for your inspection. The other organs of the body, the stomach and intestines being specially examined, were normal.

The clinical history of the case is as follows:—

Peter A., aged 9 years, a schoolboy, was admitted to Ward 12 of the Glasgow Royal Infirmary on 24th September, 1900, having been transferred from surgical Ward 18 as a probable case of meningitis. In the month of May, 1900, he fell and cut his head over the right parietal region, the wound taking five or six weeks to heal entirely. Shortly after the accident, and after the wound had commenced to heal, he began to suffer from frequent vomiting. Notwithstanding this, he returned to school, but had to leave in a few days on account of the frequent vomiting. The vomiting did not seem to be influenced by the taking of food, although it is stated that he was often rather sick before it came on. The irritability of the stomach persisted without intermission all through the summer, and about six weeks before his admission to hospital emaciation began, and has progressed very markedly since. His bowels have been costive all along, but his appetite has remained good.



Pain in the back of the neck was first of all complained of about four weeks before admission, and headache also, though the latter was only occasional. About this time his medical attendant made a diagnosis of meningitis.

His personal and his family histories are alike unimportant, and throw no light upon the case.

The following were the chief clinical phenomena observed in the ward:—His decubitus was lateral, and he could lie upon either side. There was mild delirium at times, and his speech was occasionally of a scanning or interrupted character. The tache cerebrale was always easily elicited. There was a trifling scar on the right parietal region, but no evidence of injury to the bone. Pain was experienced on palpation over the upper cervical vertebræ, and he sometimes cried out on account of pain in this situation, but the cry could not be described as characteristically hydrocephalic. No definite retraction of the head was noticed, but it was thought that the erector spinæ muscles of the neck were unduly prominent and tense. The pupils were somewhat dilated, but reacted to light and in accommodation. There was no ptosis, no strabismus, and no complaint of dimness of vision. Marked double optic neuritis was observed to be present throughout residence in the ward. The pulse was regular throughout, and varied in frequency between 80 and 100. The respirations averaged about 20, and were often deep and sighing in character, and occasionally of the Cheyne-Stokes type. The reflexes, as a rule, were normal, but owing to his great weakness it was impossible to test his walking. An area of hyperæsthesia was detected over the right front of the chest. The abdomen was distinctly retracted, and the temperature was subnormal throughout. The organs of the chest and abdomen were found to be healthy.

Undoubtedly, however, the most striking clinical phenomenon of the case was the persistent, long-continued, severe vomiting, which gradually wore the boy to a shadow. The vomiting occurred several times in the day, and occurred every day during residence, resisting all the usual treatment. As observed in the ward, the vomiting was not preceded by any nausea or sickness, and was not apparently related to the taking of food. On one occasion, while I was examining him, I asked him if he was feeling sick or in any way unwell. At the time he was lying on his back, and not apparently in any pain or discomfort. He replied that he was not. Within a minute or two, and without warning of any kind, he vomited with considerable force a large quantity of brownish-coloured

watery fluid. It was also noted that any change of his position in bed was liable to induce emesis. The vomiting was never associated with diarrhoea, and it had all the most striking features of direct cerebral vomiting.

During the last few weeks of his life he passed his urine and faeces in bed, but his appetite remained fairly good till a very late period in the case. Indeed, we could not help feeling that the actual cause of death was starvation from the constant irritability of the stomach. The vomiting throughout was undoubtedly cerebral, and was never associated with other gastro-enteric symptoms.

In the course of a clinical lecture on the case, delivered to my class on 22nd October, 1900, about three weeks before the boy's death, I stated that there were, as it appeared to me, two views that might be taken as to diagnosis—(1) that he was suffering from cerebral meningitis, and (2) that he was the subject of a cerebral tumour. After discussing the general symptomatology of these two conditions, with special reference to the phenomena observed in the case, I said that, on the whole, the symptoms pointed rather to the presence of a cerebral tumour than to meningitis. It seemed to me that the persistent vomiting, the long-continued course of the case, the absence of fever, and the double optic neuritis were more in favour of tumour than meningitis.

As regards the situation of the tumour, there were no localising symptoms to guide us, but, on the whole, it was thought to be situated below the tentorium, and in the cerebellum. As regards the nature of the tumour, I thought it not unlikely to be tubercular, chiefly on account of the patient's age, although the possibility of it being a glioma was also kept in view. As the *post-mortem* examination has demonstrated, the histological appearances are not those of either of these conditions, the tumour being, as has already been stated, a cylinder-celled adenoma, certainly an unusual form of cerebral tumour in my experience. I have presented the case to the Society chiefly on account of the long-continued and very characteristic cerebellar vomiting to which the tumour gave rise.

MEETING VII.—21ST DECEMBER, 1900.

*The President, MR. H. E. CLARK, in the Chair.*

THE NATURAL AND ARTIFICIAL MINERAL WATERS OF NAUHEIM:  
THEIR PHYSIOLOGICAL AND THERAPEUTICAL EFFECTS: THEIR  
EMPLOYMENT IN DISEASE (THE SCHOTT METHODS): AND THE  
METHOD OF PREPARING THE ARTIFICIAL BATHS.<sup>1</sup>

BY DR. J. M'GREGOR-ROBERTSON.

After explaining the routine of the treatment at Nauheim, the paper went on to show the general characters and chemical composition of the drinking and bathing springs of Nauheim, as well as of the bye-products obtained by evaporation of the water for the removal of common salt.

The physiological action of the waters was fully discussed. It was pointed out that much of the failure to recognise the value of the Nauheim treatment was due to the fact that it was assumed that—the water being below the temperature of the body—constriction of the cutaneous arterioles would be brought about, followed by a rise of blood pressure, which might be disastrous in the case of a weak heart or sclerosed vessels. Exactly the reverse was the effect, namely, a general cutaneous vaso-dilatation producing a diminution of peripheral resistance, but this was accompanied by an increased energy of cardiac contraction, due to a reflex effect upon the heart regulator nerves. The heart was thus not only directly stimulated, but also unburdened, by the complete redistribution of blood effected by the determination to the skin. Proof of these results was to be found in the determinations of blood pressure and pulse-rate by recent precise methods by Oliver, Edgecombe and Bain, and others.

The therapeutic employment of the baths could be argued out from the knowledge of these physiological effects, and the theoretical reasoning was found to be in accord with clinical experience.

The baths were of value in (1) cases influenced by changes in general nutrition—such as rheumatism, gout, and glandular conditions; in (2) cases of dilatation of the heart, or simple

<sup>1</sup> The paper in full is published in the *Edinburgh Medical Journal* for June and July, 1901.

cardiac asthenia, without valve lesion; in (3) cardiac cases, with failing compensation; and in (4) irritable nerve conditions—such as Graves' disease, tachycardia, and peripheral neuritis.

The paper went on to discuss the method of employing the baths along with exercises, after the manner of Schott, and showed how the employment of very gentle muscular exercises produced results comparable to those of the baths, the muscles becoming flushed with blood, and so relieving the heart and lowering the peripheral resistance, while from the muscles also a reflex effect upon the heart was produced.

The paper concluded with an explanation of the method of imitating the Nauheim waters with the aid of Nauheim bath salt. The author had constructed a series of formulæ for baths, of varying strength, from the tables of chemical composition of the waters. The series was based upon the Schott method of beginning with weak thermal saline baths, and gradually strengthening the bath by the addition of mother-lye, till the patient was prepared for the full effervescing bath. His No. 1 artificial bath represents the Nauheim thermal Soolbad, Nos. 2, 3, 4, and 5 representing the same bath, with the addition of one, two, three or four litres of Mutterlauge.

## MEETING VIII.—11TH JANUARY, 1901.

*The President, MR. H. E. CLARK, in the Chair.*

### I.—DEMONSTRATION OF A VARIETY OF POLYPI REMOVED FROM THE NASO-PHARYNX.

BY DR. WALKER DOWNIE.

Leaving hypertrophies of the post-nasal gland tissue out of account, the majority of the new growths which are met with in the naso-pharynx are either mucous polypi, fibro-mucous polypi, or true fibromata. Examples of these three varieties of new growths are before us to-night.

When the naso-pharynx contains a polypus, there is, in addition to the symptoms of nasal obstruction, considerable pharyngeal discomfort, excessive secretion, which collects in the pharynx, interference with mastication and deglutition (chiefly because of nasal obstruction), and occasional reflex

symptoms, particularly of the asthmatic type. Occasionally, however, thickness of speech is the only indication of the presence of a new growth in this space.

#### MUCOUS POLYPI.

When mucous polypi are found in the naso-pharynx, they almost invariably spring from some portion of the nasal fossæ, and they usually have well-marked, and sometimes long, pedicles. They occur more frequently than is generally supposed, and their presence is, in many instances, the reason of nasal obstruction persisting after the removal of intra-nasal polypi.

Specimen 1 is an irregularly-shaped mucous polypus, which sprang from the posterior end of the left middle turbinal bone in a child, 5 years old. It lay in the naso-pharynx, blocked both posterior nares, caused snoring respirations, thick speech, and frequent cough. It was removed by the snare passed through the nose under chloroform.

Specimen 2 is a large polypoid swelling from the posterior extremity of the right middle turbinal in a girl, aged 9 years. It very completely filled the upper half of the naso-pharynx, and was removed by the snare passed through the nose under chloroform.

Specimen 3 is a pear-shaped pedunculated mucous polypus, which sprang from the posterior extremity of the left middle turbinal in a girl, aged 9 years. It lay freely movable in the naso-pharynx, and was removed by the snare passed through the nose under cocaine.

Specimen 4 is a mixed specimen, and is really two polypi. The larger pear-shaped body is a fibro-mucous polypus, while the second growth, springing from the larger with a well defined pedicle, is a mucous polypus. The specimen was removed from a boy, aged 13 years, who had complete nasal obstruction. The fibro-mucous portion sprang from the posterior end of the right middle turbinal, and lay in the naso-pharynx, while the mucous outgrowth lay in and blocked the left posterior nares. Removed by snare passed through the nose under chloroform.

Specimen 5 is a long mucous polypus, which takes a peculiar spiral form. It occurred in a girl, 13 years old, and sprang by a very fine pedicle from the posterior extremity of the left middle turbinal, from which it hung downwards, so that the lower border was in a line with the free border of the soft



palate. Removed by snare passed through the nose under cocaine.

Specimen 6 is a sausage-shaped mucous polypus, which sprang from the posterior end of the left middle turbinal in a lad of 19. It occupied the post-nasal space, gave rise to symptoms of persistent head-cold, with nasal obstruction. The lower end of the growth projected below the border of the soft palate, and viewed through the mouth it was seen to hang down behind the uvula. Removed by snare passed through the mouth under cocaine.

Specimen 7 consists of two rounded mucous polypi, each with a very fine pedicle, which protruded, one from the right and one from the left posterior nares, into the naso-pharynx. They together caused complete nasal obstruction. Removed from a lady, 22 years of age, by snare passed through the nose under cocaine.

Specimen 8 is a well-marked pear-shaped mucous polypus, with a very thin pedicle. There is a small pedunculated mucous outgrowth on its posterior aspect. It very completely filled the naso-pharynx in a girl, aged 24, and was removed by the snare passed through the nose under cocaine.

Specimen 9 consists of a group of three variously shaped mucous polypi, each with a fine pedicle, and which together filled the naso-pharyngeal cavity in a man, aged 26. They were removed separately by the snare passed through the nose under cocaine.

Specimen 10 was a large, very soft, mucous polypus, which, springing by a very fine pedicle from the right middle turbinal, lay in the naso-pharynx of a man, aged 30. Removed by snare passed through the nose under cocaine.

Specimen 11 is a large mucous polypus, removed from a woman, aged 36. It sprang from the posterior half of the left middle turbinal. The large flat portion occupied the posterior half of the left nares, while the long rounded portion lay in the naso-pharynx. Removed by snare passed through the nose under cocaine.

Specimen 12 is a large flattened mucous polypus, from a man, aged 45. His own doctor had removed several mucous polypi from the left naris without relieving the obstructive symptoms. By the post-rhinal mirror the left posterior naris was seen to be blocked by this flat mucous growth. Removed by snare passed through the nose under cocaine.

Specimen 13 is a large, firm, mucous polypus, which ends in a curious upturned beak. It occurred in a lady, aged 48. She had had nasal obstruction for many years. On inspira-

tion, while the left naris was completely blocked, air passed through the right naris, but on expiration both nares were completely obstructed. The growth sprang from the posterior extremity of the left middle turbinal, and very fully occupied the naso-pharynx. The body of the growth blocked the left naris constantly, while the beak entered and blocked the right posterior naris during each expiratory effort. Removed by snare passed through the nose under cocaine.

Specimen 14 is a pear-shaped mucous polypus, from a man, aged 30. It sprang by a long fine pedicle from the posterior end of the right middle turbinal, and lay in the naso-pharynx. An ulceration of its surface led to expectoration of blood, which disappeared after removal of the growth. Removed by snare passed through the nose under cocaine.

Specimen 15 is a pear-shaped mucous polypus, from a gentleman, aged 64. It sprang from the posterior end of the right middle turbinal, and occupied the upper portion of the naso-pharynx. It blocked the right nostril, and during two years prior to the time I examined him he had had frequent paroxysms of asthma during the night. The removal of the polypus was followed by the immediate and complete disappearance of all asthmatic symptoms. Removed by snare passed through the nose under cocaine.

Specimen 16 consists of two polypi—one a flattened, soft, mucous polypus, which sprang from the anterior end of the left middle turbinal, and the other a pear-shaped, firm, mucous polypus, from the posterior end of the same turbinal, and which lay in the naso-pharynx. Removed by snare passed through the nose under cocaine.

In the *removal* of mucous polypi from the naso-pharynx, the nasal fossæ and the walls of the post-nasal space should, in the first place, be deeply anæsthetised by the free application of cocaine. Where there are intra-nasal polypi present, these should, of course, be first removed, after which the cold wire snare is passed through, either in middle or inferior nasal meatus, the loop of wire being kept in touch with the septum throughout its progress backwards. When the loop has entered the naso-pharynx the polypus may be engaged by making a quarter of a turn of the snare, or the wire may be assisted to surround the growth by the forefinger passed through the open mouth and up behind the palate. When the loop has been slipped around the polypus, the wire is slowly tightened, and by a wriggling motion it is caused to grasp the growth as near the point from which it springs as is possible;

then the growth may be torn away by a sudden jerk, or may be detached by cutting through its pedicle. The polypus, on being detached, may fall into the mouth; occasionally, when comparatively small, it slips into the gullet and is swallowed. A week after their removal the surface from which the polypi sprang should be freely cauterised, the result of which is the formation of firm scar tissue on which no recurrence can take place.

#### FIBRO-MUCOUS POLYPI.

The fibro-mucous polypi, of which I to-night show four specimens, are comparatively rare. The tumours, which are slow in growth, vary in size from that of a damson to that of a Victoria plum. They are smooth on the surface; usually, though not necessarily, dark-red in colour when *in situ*; are rounded in form, and, as a rule, have a very short pedicle.

Panas, quoted by M'Kenzie, first drew attention to the anatomical reasons for the difference in structure of the intra-nasal and naso-pharyngeal polypi. The mucous membrane round the posterior nares and in the immediate neighbourhood of those orifices presents a kind of transitional form between the mucous membrane of the nasal fossæ, and the dense, closely adherent fibro-mucous lining of the pharyngeal vault. Growths in these situations are composed, to a great extent, of the structural elements of the tissue from which they originate, and whilst a polypus springing from the pituitary membrane may be expected to be of mucous texture, one from the under surface of the basilar process is likely to be fibrous; and a tumour taking origin from the membrane round the posterior nares, where the fibrous and mucous elements are mingled, will probably present a corresponding fibro-mucous structure.

Three of the fibro-mucous polypi, which I show to-night, were removed by means of the cold wire snare, and the fourth by forceps. The snare was passed through the nose in two of the cases, and in the third it was passed into the naso-pharynx through the mouth.

As their removal is frequently followed by smart hæmorrhage, the electric cautery snare is recommended by some; but the bleeding usually is of short duration, and ceases spontaneously, and when it does not do so it is readily controlled by pressure within the naso-pharynx. Personally, I prefer the cold wire snare, as being more quickly and more accurately manipulated. Fibro-mucous polypi, unlike the mucous variety, show little tendency to recur after removal.

Specimen 17 is a large, round, firm, fibro-mucous polypus, from a boy, aged 14. He had greatly hypertrophied tonsils, with a history of complete nasal obstruction, with considerable deafness for fully six months, and these latter symptoms were supposed to result from the presence of post-nasal adenoids. Both tonsils were removed under chloroform, after which it was found that the naso-pharynx was completely filled by this polypus. It was then removed by the snare passed through the mouth while he was still under the anæsthetic.

Specimen 18 is a large, flattened, firm, fibro-mucous polypus, from a gentleman, 80 years of age. His right naris was completely occupied by large mucous polypi, while this fibrous growth sprang from the posterior extremity of the right middle turbinal, and hung downwards in the naso-pharynx. It was removed with forceps along with a portion of the middle turbinate bone under cocaine. Thirteen years previous to my operation, the late Professor Spence, of Edinburgh, had removed many mucous polypi from the same naris.

Specimen 19 is a rounded, rather fibrous than fibro-mucous tumour, from the naso-pharynx of a lady, aged 77. She had had mucous polypi in both nares for fully twenty-five years, and the growth in the pharynx had also been present for many years. It sprang from the posterior wall of the pharynx, and lay opposite the posterior nares. She was the mother of a doctor, and prior to taking chloroform, she urged him to promise that the growth in the throat should not be touched, as she feared serious hæmorrhage. After removing the intra-nasal polypi, I found that the growth had a very small area of attachment, and so removed it. There was practically no bleeding, and the old lady was greatly delighted to find her throat, as well as her nose, clear when she awoke. Removed by the snare passed through the mouth under chloroform.

Specimen 20 is also a firm polypus, which might be characterised as fibrous, from a gentleman, 80 years of age. The right naris contained many large mucous polypi, and this fibro-mucous growth sprang from the posterior end of the right middle turbinal. It was attached by a small pedicle, and the growth filled the upper half of the naso-pharynx. Removed by snare passed through the nose under cocaine.

#### FIBROUS POLYPI.

Of the third variety—the fibrous polypus—I show one specimen removed (12th November, 1892) from the naso-pharynx of a boy, aged 11 years. He had complained of



difficulty of breathing through the nose for many months, and for at least eighteen months he had snored loudly while asleep.

The naso-pharynx was, on examination, found to be completely occupied by a large fleshy growth, which bled readily on manipulation. On digital examination, under chloroform, the growth was found to spring from the vault of the pharynx. Its extirpation was attempted by means of a chain écraseur, but this instrument broke while crushing through the firm fibrous pedicle. It was latterly removed by torsion, while firmly grasped by a wire-robe écraseur. Twelve months later a somewhat similar tumour appeared in the superior maxilla. This was excised by Dr. Knox in the Royal Infirmary, and the result has been subsequent immunity.

These growths, though histologically innocent, present many of the characteristics of malignancy. They, like this one, spring from the vault of the naso-pharynx, from which they extend into the nasal fossæ, or even invade the antrum, leading to nasal obstruction and facial disfigurement. They usually occur in males between the ages of 10 and 25, they are intimately associated with the periosteum and bone, and originate, in all probability, in some developmental aberration.

## II.—CASE OF JAUNDICE DUE TO A LARGE IMPACTED GALLSTONE, WHICH WAS REMOVED BY OPERATION.

BY DR. DAVID NEWMAN.

The patient had been in Dr. Middleton's ward, and was transferred to Dr. Newman's, on account of an attack of jaundice with severe pain, pyrexia, and tenderness in the abdomen. The following is an abstract of the history of the case :—

Mrs. R., aged 45 years, was admitted to Ward 15 of the Glasgow Royal Infirmary on 11th October, 1900. She complained of pain in the hepatic region and in the right flank. Her present illness began about the end of July, 1900, when she was seized with pain in the abdomen and sickness, but there was no diarrhœa. The pain was dull and aching in character, and became worse on pressure over the painful area, but it was never sharp or shooting in character. At this time (July) she was confined to bed for two weeks, and in August she noticed for the first time that she was jaundiced. This, however, passed away. The urine was dark in colour previous to the onset of the attack, the bowels constipated, and the motions clay coloured. In July, 1899, she had a



similar attack to the one occurring a year later. On admission to the medical ward she admitted that she had been losing flesh. The skin was jaundiced over the surface generally, and there was yellow tinting of the conjunctivæ. The liver dulness was increased in a downward direction, the lower border in the middle line being 2 inches below the ensiform cartilage, and in the nipple line the hepatic dulness extended as far down as the level of the umbilicus. On palpating over this dull area pain was complained of, a rounded mass could be felt by the hand and could be detached from the liver, and on deep palpation it presented a nodular feeling to the hand. There was no enlargement of the spleen, the heart and lungs were normal, temperature also normal, the pulse was 84, the respirations were 20; there was no œdema of the feet or legs. The urine was acid, its specific gravity 1024, there was a trace of albumen, and a considerable quantity of bile pigment. The following note was made on 24th September:—"The swelling at the lower border of the liver varies in size, at times it can scarcely be felt at all; the degree of icterus also changes day by day; there has only been one attack of pain in the right side since admission, it was relieved by hot fomentations: there has been no rise in temperature; and no gall-stones have been found in the motions."

*3rd October, 1900.*—"The patient has had several attacks of pain and sickness since the last note, and the jaundice is much more marked than on admission."

*11th October.*—"On the 3rd inst., the temperature rose to 103°, and since then has been oscillating between 99° and 101° until yesterday, when the highest record was 100·4°. Coincident with the rise in temperature, there was increase in the pain and a deepening of the jaundice, and latterly a considerable increase in the size of the swelling. The patient was seen yesterday by Dr. Newman, who regarded it as a case of impacted gall-stone, and one suitable for exploration; the patient was therefore transferred to the surgical house to-day."

*24th October.*—"The abdomen was opened this morning by Dr. Newman, and the gall-bladder was found to be adherent to the end surface of the liver. When the gall-bladder was opened, a large calculus was found blocking its orifice. The calculus was hour-glass shaped, one portion being in the gall-bladder, the other part being in the distended gall-duct. The calculus was firmly adherent to gall-bladder and to the duct throughout, so that it was impossible to remove the stone entire; it was therefore removed piecemeal. The gall-bladder was divided from end to end, and the incision carried to the

apex of the stone in the distended gall-duct. After the stone had been completely removed, the interior of the gall-bladder and the duct were scraped with a Volkmann's spoon, the line of the incision was sutured together with the exception of the lowermost extremity, which was stitched to the wound in the abdominal wall, and a drainage-tube inserted from end to end. The sinus was kept open for six weeks, during which period the patient's general health greatly improved, but, except on one occasion, there was no evidence of bile escaping into the intestine, the bowels being very constipated and the motions clay coloured."

"As it seemed necessary to take further steps, the patient was prepared for operation on 18th December, the purpose being to anastomose the gall-bladder with the duodenum, but during the night a well-coloured motion was passed, and as this seemed to indicate that the bile-duct was again opened, it was decided to postpone any further operative measures."

*25th December.*—"The improvement in this case has been well maintained, and the motions are still well coloured and moderately regular; there is now little discharge from the fistulous opening, and in all respects the patient's condition is greatly improved."

*7th January, 1901.*—"The patient was dismissed to-day, there being still a slight amount of discharge from the fistula. She reported herself a fortnight later, when the fistula was found to be completely healed and the patient in perfect health."

### III.—FOUR CASES OF UNILATERAL RENAL HÆMATURIA WITHOUT OTHER SYMPTOMS OF DISEASE BEING PRESENT.

BY DR. DAVID NEWMAN.

In the majority of cases of renal hæmaturia, the surgeon can easily locate the situation of the bleeding to one kidney, and form an opinion as to the nature of the lesion; in a few instances, however, he can only determine the side from which the blood comes, and complete his diagnosis by making an exploratory incision. But even when the kidney has been exposed, it is not always possible to find the cause of the bleeding, and hence some observers believe in the occurrence of hæmaturia independent of a morbid lesion, or "*hæmaturia sine materia*." The term "symptomless hæmaturia" has also been in use for a considerable time, and indicates the revival of an old idea. That it has been accepted by the profession is not to be

wondered at, seeing that the word "hæmaturia" is often employed, not as it were to denote a symptom, but as the name of a disease. The appearance of blood in the urine is itself a symptom, consequently "symptomless hæmaturia" is a misnomer; we might as well speak of "symptomless albuminuria," "symptomless hæmoptysis," or "symptomless aphonia."

It has been stated that, after the kidney has been removed for the relief of a persistent hæmaturia, inspection of the organ, and even a microscopic examination of the tissue, may fail to reveal any morbid condition. Admit that these observations are correct, do they prove that bleeding may take place from a healthy organ? When a kidney is excised, the vascular condition of the tissue, as it existed during the life of the organ, cannot be ascertained. Again, every pathologist knows that certain morbid conditions associated with bleeding during the life of the patient, the surface from which the blood escapes may show no evidence of injury or of disease to explain the occurrence.

The four cases have several points in common—in all the hæmaturia were profuse and lasted over considerable periods; the bleedings were localised to one kidney by cystoscopic examinations; and in all of the cases, beyond the bleedings, the other symptoms were trivial. In the three cases first described, palpation of the kidney was rendered extremely difficult.

*CASE I. — Sudden profuse hæmaturia, continuous for eighteen days, intermittent thereafter for six months—Thrombosis and hæmorrhagic infarction in left movable kidney—Nephrorrhaphy followed by disappearance of the bleeding.*

J. M., aged 52 years, a labourer, was admitted into the Glasgow Royal Infirmary on 1st December, 1899, suffering from hæmaturia. He always considered himself in good health up to the end of June last; at this time blood appeared in his urine, making it, he stated, almost black in colour. He sought medical advice, and was placed under medicinal treatment, but the bleeding continued for eighteen days, during which time he continued his work. The hæmaturia then disappeared suddenly and remained away for three days. Since that time the blood has been present with occasional intervals of a day or two. The presence of the blood bore no relation to exercise, although he stated that the colour of the urine was darker from 7 A.M. till 12 mid-day, the former being his hour for commencing work, but he did not stop work till

6 P.M. Pain was not a feature of his illness, as he only complained of this for one day about three months prior to admission. The pain was seated in the bladder and urethra, and lasted during micturition only. It was associated with undue frequency in passing water, and the patient thought that blood was present in greater quantity than usual at that time (July, 1899). There was no alteration in the character of the stream or sudden stoppage of the flow, nor had he ever noticed anything definite in the way of gravel. There had been no crystalline deposit, no blood-casts or other renal casts, and oedema was not present.

On admission, he appeared to be a fairly well nourished man, but anæmic from loss of blood; the heart, lungs, liver, and spleen were normal; there was no tenderness or dulness on percussion over the region of the kidneys, nor did they appear to be enlarged. On account of the formation of the chest, palpation of the kidneys was not possible; the lowermost ribs almost touched the crest of the ileum. The urine was almost porter coloured, with a specific gravity of 1026, and a slightly acid reaction. Albumen was present, but not in greater quantity than the blood warranted. No crystals and no tube-casts present, and no tubercular bacilli were discovered.

*3rd December.*—A cystoscopic examination was made to-day by Dr. Newman. The mucous membrane of the bladder was found to be normal, but deeply stained urine was seen to escape from the left ureter.

*22nd December.*—Since admission the blood has, if anything, become slightly less abundant. To-day an exploratory incision was made, when the left kidney was found situated very high up, close to the diaphragm. The organ was rotated on its short axis, the upper margin being thrown forward, while at the lower third of the kidney there was a wedge-shaped hæmorrhagic infarction. The kidney was restored to its normal position, and sutured to the parietes.

The patient was dismissed on 23rd January, 1900. Blood still continued to appear in the urine occasionally, but in a much smaller amount than formerly. Occasionally it was entirely absent for two or three days at a time during the last couple of weeks.

*9th March, 1900.*—The patient presented himself to-day; he has put on flesh and looks well, and he stated that the urine has been free from blood for three weeks.

*7th May.*—The patient reported himself to-day, and stated that since he last presented himself the urine has been free from blood. He appears now to be in perfect health.



CASE II.—*Frequent intermittent unilateral hæmaturia from torsion of the renal veins in movable kidney, cured by nephrorrhaphy.*

J., aged 29 years, was admitted to the Sandyford Home on 4th September, 1899. In May, 1899, he sustained slight fall on the right side, the edge of a step coming in contact with the right lumbar region. The urine first passed after the accident was observed to contain a moderate quantity of blood. This continued at frequent intervals, the shortest being two and the longest five weeks; the hæmaturia, as a rule, lasted for from four to nine days; generally the urine was of a dark port wine colour, and was always relieved, and often stopped, by rest in bed. During the attacks of hæmaturia there was slight discomfort and a feeling of dragging in the left renal region, but nothing amounting to pain. Palpation of the kidney was not possible on account of the stoutness of the patient. The urine contained no abnormal constituent beyond blood. On examination with the cystoscope, blood was seen to flow from the right ureter only. A fortnight after admission nephrorrhaphy was performed, when the kidney was found to be freely movable, and of a dark chocolate colour throughout. The kidney was fixed by means of sutures, and thereafter the hæmaturia disappeared and has not returned.

CASE III.—*Unilateral renal hæmaturia, continuous at first, afterwards intermittent, during six months—Round-celled sarcoma of left kidney—Nephrectomy—Death from sudden collapse on the fourth day.*

J. R., aged 22 years, was admitted into the Glasgow Royal Infirmary on 25th December, 1899, complaining of hæmaturia. At the beginning of August, 1899, he, for the first time, observed his urine contained blood. He was attended by Dr. Frew, of Kilmarnock, and was able to resume work in the course of a month, by which time the hæmaturia disappeared. He kept well until eight weeks prior to admission, when he became the subject of a second and similar attack, which differed, however, by the bleedings being intermittent. The urine was always clear from 10 A.M. till 4 P.M., even while he was not in bed. The blood was frequently absent entirely for a day at a time. The stream was always natural in form, was started without difficulty, and never at any time suddenly stopped. He frequently observed the presence of clots, but took no notice of their form; they usually appeared towards the end of micturition, after which the urine was much clearer.



He never passed gravel, nor did he observe any gritty sediment; he never suffered from pain over the bladder, or from urethral pain, and was always free from œdema. On admission, he appeared to be fairly well nourished, but anæmic. The heart, lungs, and liver were normal. On palpating over the kidney only the lower margin could be felt, and only when pressure was made did the patient complain of pain. The chest was very deep, and the kidney unusually high up. The urine was deep red colour; specific gravity, 1025; and beyond blood there were a few epithelial cells, chiefly large round nucleated cells; no crystals and no tube-casts were discovered.

*30th December.*—By means of the cystoscope, blood was seen to escape from the left ureter only: the bladder was healthy.

On 5th January, 1900, an exploratory incision revealed the presence of round-celled sarcoma, about the size of a hen's egg, occupying the upper part of the kidney. The kidney was very inaccessible, being situated very high up. The kidney was excised along with the tumour. For the first three days after the operation the patient was remarkably well, but on the fourth day violent sickness set in, followed by sudden collapse, and the patient died on the 9th of January. A *post-mortem* examination was not permitted, but an examination of the wound showed that there had been no hæmorrhage.

CASE IV.—*Profuse and continuous unilateral renal hæmaturia—No exploratory incision or operation—Medical treatment successful.*

T. B., aged 65, labourer, was admitted to the Glasgow Royal Infirmary on 8th February, 1900, suffering from hæmaturia of two months' duration. With the exception of attacks of influenza in 1897 and 1899 respectively, he always enjoyed good health up till the onset of his present illness. This he dates from the middle of December, 1899, at which time he noticed his urine to be of a brown colour. He followed his occupation until the New Year, but becoming the subject of neuralgic pains in his head, he took to his bed and sought medical advice (Dr. Benny, of Denny), learning then for the first time that the colouration of his urine was due to the presence of blood. The hæmaturia remained constant up to the time of admission, but the urine varied slightly in depth of colour from time to time, but without any relation to exercise or rest. The stream itself, he stated, was quite natural, but he admitted frequency of micturition since the

onset of the illness. The stream was uniform in colour, and he never observed any alteration of the quantities. The urine was free from clots, gravel, or gritty matter of any kind. Pain was entirely absent, and he never suffered from œdema of the feet or legs, his only symptom being, in fact, the hæmaturia. He was confined to his bed since the beginning of the year. The patient was a poorly nourished man, older in appearance than his years indicate. The complexion was sallow, but neither the cheeks or the mucous membrane gave evidence of any marked anæmia; the tongue was moist and clean; the pulse regular, of fair tension, 75 per minute, the accessible arteries presented marked evidence of calcification; respiration 16 per minute; there was no œdema, temperature normal, nothing could be detected by palpation or percussion of the kidneys, nor was there anything abnormal to be discovered in his abdomen. The heart apex beat was visible and tangible in the interspace inside the nipple line. The precordial dulness was slightly encroached upon by the adjacent lung. The first sound at the apex was somewhat toneless, but there were no murmurs; lungs normal and spleen normal; urine of a deep red colour, with a deposit of blood corpuscles; specific gravity of 1072, reaction acid, albumen fairly copious, no sugar, and the microscope revealed nothing but red and white blood corpuscles.

*9th February.*—A cystoscopic examination was made by Dr. Newman this morning. The bladder was found to be normal, but blood-stained urine was observed flowing from the left ureter. Another cystoscopic examination was made on 15th February; again blood was seen escaping from the left ureter, and also a small blood clot was observed adhering to the orifice.

Considering the feeble condition of the patient it was not considered advisable to explore the kidney. A prescription was ordered, containing 10 drops of tincture of cannabis indica and a teaspoonful of hazeline, and this was given three times a day, and complete rest was enjoined.

*3rd March.*—Following the treatment of complete rest in bed, combined with dietetic and medicinal treatment, the amount of blood in the urine gradually became less.

*7th March.*—Urine quite free from blood yesterday and to-day, the diminution having been gradual since the treatment was instituted.

*17th March.*—Patient was dismissed to-day, having been allowed out of bed since the 11th inst., the urine still keeps entirely free from blood, and his general condition has

improved. He has instructions to continue the medicinal treatment, and to report himself in a fortnight.

*5th June.*—Patient has regularly reported himself at intervals of a fortnight or three weeks, and since 14th March there has been no recurrence of the hæmaturia.

In this case it was extremely difficult to say what was the condition present in the left kidney, but it is quite possible that the morbid lesion was the same as in Case I.

IV.—CALCIFIED MESENTERIC GLAND REMOVED FROM A CASE IN WHICH LAPAROTOMY WAS PERFORMED FOR THE RELIEF OF SYMPTOMS OF RECURRENT INTESTINAL OBSTRUCTION (FRESH SPECIMEN).

BY DR. J. H. NICOLL.

The patient, a man of middle age, was sent to me by his medical adviser with a history of recurrent attacks of constipation, accompanied by much griping pain, collapsing sickness, and vomiting. The attacks recurred at intervals extending from days to weeks, and lasting for from twelve to forty-eight hours. The pain was referred chiefly to the region of the sigmoid.

Abdominal section was performed this morning in a nursing home.

The meso-sigmoid was found to be of unusual length, and anchored by adhesions on its outer side to the fascia of the iliac and inguinal regions, which was drawn out into a fold terminating in numerous elongated bands. The mesial aspect of the elongated meso-sigmoid was entirely free from such adhesions.

Scattered over the entire mesentery (so far as the exploring hand could reach) were numerous small hard bodies. One of these, excised for diagnostic purposes, forms the specimen. It appears to be a perfectly calcified mesenteric gland.

It is of interest chiefly as illustrating in its extreme hardness a perfect degree of calcification. The other nodules present appeared to the sense of touch to be equally hard.

There was a history of peritonitis (tubercular?) in youth.

MEETING IX.—1ST FEBRUARY, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

DISCUSSION ON THE "PROVISION FOR THE TREATMENT AND RELIEF OF THE TUBERCULOUS POOR."

The discussion was introduced by Professor M'Call Anderson, Dr. J. Lindsay Steven, and Dr. A. K. Chalmers.

A. INCIPIENT STAGE OF TUBERCULOSIS.

BY PROFESSOR M'CALL ANDERSON.

When the Council of the Medico-Chirurgical Society did me the honour of inviting me to open a discussion in reference to the "Provision for the Treatment and Relief of the Tuberculous Poor," my first impulse was to ask to be excused, because this winter, as many of you know, my time is so fully occupied with my public and other duties; but, on reflection, I came to the conclusion that I could not decline an invitation so courteously conveyed, more especially as I feel that the chief value of such meetings consists in the discussion which follows upon the introductory addresses, and which should, therefore, be short and to the point.

In one of the numerous letters in the *Herald* on the treatment of the tuberculous poor, I was surprised to read the statement that "doctors seem too busy, as a rule, to devote themselves to public action," while it is well known that they have been the pioneers in connection with almost all the advances in sanitation in recent years; and this large and influential meeting, composed as it is mainly of medical men, is an excellent illustration of their ceaseless endeavours to do what they can to improve the health, and to increase the happiness, of their fellow-men.

The subject, I am led to understand, is to be considered under three heads, viz.—(1) Cases in the incipient stage of tuberculosis; (2) cases in the middle stage; and (3) advanced cases; and I am asked to deal specially with the first of these. But I confess that I feel some difficulty in dissociating the first class of cases from the second, as similar treatment applies to both, although, of course, the prospects of success are not so hopeful in the latter.

I propose, first of all, to refer to those methods of treatment which have commended themselves to me in dealing with phthisis in general, but I shall on this occasion do little more than glance at them, as I have had frequent opportunities in this and other societies of giving my opinion with regard to them; and I shall conclude by indicating those which appear to me most suitable for the treatment and relief of the poor.

I have long been deeply interested in the subject of pulmonary consumption in its practical aspects, and have always taken a hopeful view with reference to the prognosis of this disease, having never discovered any reason why patients suffering from consumption should not recover so long as a sufficiency of healthy pulmonary tissue is left to carry on the function of respiration.

Many years ago the late Dr. MacCormac, of Belfast (father of Sir William MacCormac), made the observation that, in his opinion, consumption was due to the inhalation of re-breathed air, and few nowadays will be inclined to deny that there is a sound basis of truth in the suggestion. At all events, it is undoubted that pure air is a most important factor in warding off and in curing consumption, so that much remains to be done by the local authorities—in the way of prevention at all events—with the view of providing more wholesome dwellings for the working classes, and of rendering the atmosphere more free from impurities.

[The speaker here alluded in passing to an experiment made by his friend, Dr. Denis, of New York, when crossing the Atlantic. By exposing three culture tubes in the saloon, in the cabin, and on the forepart of the deck of the vessel, he was able to demonstrate how impure was the atmosphere of the sleeping cabin and saloon.]

And yet we find that it is not an uncommon custom to coop up phthisical patients in a couple of rooms during the winter months, quite regardless, apparently, of the serious disturbance to the general health entailed by such a procedure.

The question of climate, therefore, merits our most serious consideration, and there can be no question that excellent results have, in many cases, accrued from attention to this point, and especially as the result of long sea voyages and of prolonged residence in high mountain valleys. As regards the first of these, it must be observed that a voyage has a very different effect from a residence at the coast, and sailors have repeatedly informed me that they always suffered from colds when on shore, which never left them until they were fairly out at sea again. This method of treatment is specially



applicable to those who are fairly good sailors, and who have a liking for the sea; and they should be warned to spend the whole day, and every day, upon deck, and, when possible, to have the port holes of their berths open at night. The beneficial results often observed under favourable conditions depend not only upon the purity of the air, but also upon the comparatively equable temperature at sea, and upon the enormous appetite which so often accompanies a life on the ocean wave. One of the most suitable voyages is round the Cape to Australia in a first-class ocean steamer, in a deck cabin if possible, the voyage being so timed that the patient, leaving this country in October, arrives in Australia towards the close of the year. But a mistake which is too often made by patients who have recovered their health on the voyage, is to disregard instructions, and, instead of returning after a short stay, to remain in Australia, and especially in towns such as Melbourne, where consumption is very rife, and where all the improvement is apt to be lost, too often never to be regained.

Experts are by no means unanimous as to the reason for the marvellous improvement which so often results from a residence in high mountain valleys, but there are good grounds for believing that it depends upon a combination of circumstances. In the front rank must be placed their elevation, with, as a consequence, the rarefaction of the atmosphere, the bracing coolness, and the purity and aseptic qualities of the air. Some of the benefit may also be ascribed to the intensity of the solar radiation, and to the dryness and stillness of the air. It is a mistake, however, to suppose that the inhabitants of elevated regions enjoy complete immunity from phthisis, but when such cases occur they generally result from inhabiting filthy, badly ventilated, and damp houses, and from otherwise setting at defiance the recognised principles of hygiene and of diet.

In the selection of a suitable locality we have an abundant choice in various parts of the world, such as the Neilgherry Hills, the Kirghiz Steppes of Asiatic Russia, Davos Platz and the Engadine in Switzerland, many localities in the Highlands of South Africa, and numerous health resorts in the United States, Ecuador, and Mexico.

In an interesting publication on Davos Platz, "by one who knows it well," the writer says—"The first two patients of which the place can boast were happy in their choice when they selected Davos . . . as the spot to test on their persons the then still debated system of treating consumption

by a residence in high Alpine air. One of them was a German medical man of experience, who arrived with good diplomas in his pocket, but a very bad lung under his waistcoat. He was accompanied by a young friend of pleasing but effeminate exterior, whose face, guiltless of the capillary appendages usual to the masculine countenance, gave rise to the belief in the minds of the then unsophisticated peasantry that he was a Polish princess in disguise; and the uncomfortable result was that the door of the one modest hostelry was for long closed against the pair on that wintry afternoon. Notwithstanding this inauspicious reception, the German physician and his supposed lady-love regained health rapidly, and when they showed themselves again in Germany, were admirable living advertisements both of the system and the place." There are few of my hearers who are unable to recall from their own experience illustrations of the benefits of a residence at Davos Platz.

I shall only refer in passing to one other of these numerous health resorts, namely, Colorado. Dr. Chas. Denison, who was himself cured by a residence at Denver, the capital of Colorado, a city lying at an altitude of 5,200 feet, has given a charming account of the life which should be led by sufferers from consumption, and of the benefits accruing therefrom. "Let the invalid tourist, on his arrival in Colorado, remain ten days or a fortnight in one of the lower towns—Boulder, Denver, Pueblo, or Canon City, as the case may be—and from thence, if desirable, advance gradually, by rail, horseback, or wagon, to higher levels, as the enfeebled lungs accustom themselves to the rarefied air.

"One of the best methods of gaining the altitudes, and of obtaining the highest possible benefit from air, sunshine, exercise, and elevation, is by *camping out*. In the pre-railroad days, when all who crossed the plains were compelled to do so in a wagon, or with an ox-team, the degree of improvement was greater among the consumptive invalids than it is at the present time, because then all phthisical patients, even though they left home upon a mattress, *must* live in the dry, open air, sleep under the stars, and often do their own cooking.

"The charm of this unique country lies in its variety, its capability of developing new and interesting features, and the novel experiences it offers wherever one may turn. The mountains, with their beautiful parks and cañons, are accessible from most of the first stopping points upon the railroad by less than a day's ride.

"Armed, equipped, and outfitted, a party may follow one of the creeks up a rugged cañon, camping at nightfall upon the banks of the stream beneath the crags; finally, they reach a park above, where they pitch their tent in a wooded vale near a tumbling mountain stream, . . . and spend weeks delightfully, sketching, botanising, geologising, fishing, or hunting, but always and ever recuperating. . . . As one has wisely said, 'No one need be afraid of the sunlight of Colorado. It has all the beneficial effect of sunlight in other countries, with none of its enervating effects common elsewhere. *Bask in it*, enjoy it all you can, for few have as yet fully appreciated the beneficial effects of the chemical action of sunlight on the blood.'

"As for the sunsets of Colorado, they are, as we have said, truly unsurpassed. No artist, without incurring the imputation of exaggeration, could do full justice to the vivid tints and gorgeous colours which bathe our western skies after the sun has sunk below the mountain horizon.

"To see one of these camping parties coming in from the mountains, after 'roughing it' for a month or two, is sufficient to convince the most incredulous of the utility of the *régime*. They left the plains thin, languid, and pallid; they returned bronzed and rugged, with elastic tread and full chests, gladly owning that to the experiences of camping out they owe a new lease of life. It is an opinion which I have previously expressed, that to the fact of *sleeping upon the ground* in the pure, dry air, amid the balsamic exhalations of this primitive resting-place, may be attributed much of the happy result of camping out. The system, roused by the tonic influences of earth and air, wakes into new life and vitality, and morbid feelings and conditions wear away."

Time will not permit of my dwelling longer upon this class of health resorts, but it will be admitted that sea voyages and residence in high mountain valleys constitute the very essence of the out-door treatment of consumption. They have, however, one drawback—many patients feel acutely their banishment from home, and if, unfortunately, the case terminates fatally, it is sad to die in a foreign land and away from one's own family and friends.

"The open air treatment of consumption," as the term is understood in this country, is no new thing. It has stood the test of forty years in Germany and in Colorado. Indeed, it is but a modification of the climatic treatment just referred to. It consists essentially of keeping the patient in the open air from morning till night, and freely exposed to it from night

till morning, in combination with a very generous diet. Exercise is most carefully regulated, so as to avoid any decided elevation of temperature or other untoward symptom, and when there is fever the patient is kept in bed. The results of this treatment have been so remarkable that it is not astonishing to know that, in recent years, multitudes of sanatoria have sprung into existence in almost all parts of the civilised world. I am free to confess that, when the Consumptive Homes at Bridge of Weir were first started, I was not favourable to the undertaking, for the simple reason that it was intended to run them on the old lines, but Mr. Quarrier is far too wise a man to turn his back upon the newer developments, and, now that the open air treatment has been successfully inaugurated, they are worthy of every sympathy and support. And Mr. Quarrier has thus added yet another to the many obligations under which he has laid us in his increasing efforts to add to the happiness, and to improve the moral and physical condition of the poor.

Two summers ago, while staying with my friend Dr. Lawson, in Somersetshire, I visited with him the sanatorium at Mendip. I had hardly entered the grounds when the medical superintendent, pointing to a gentleman, said to me—"There is a patient of yours." I had seen him about nine months previously, in consultation with Dr. Carlyle, of Greenock, at which time he had a large cavity in the upper lobe of one lung, with pronounced constitutional symptoms. He was now the picture of health, and his lungs were sound. This is but a sample of the results which have been obtained at this admirably conducted institution.

Coming nearer home, we find the same encouraging results, as stated in the annual report of the Consumptive Sanatoria at Bridge of Weir, although many of the patients received were in a pretty advanced stage of the disease. Of the cases treated, 20 per cent are reported cured, 28 per cent almost well, and 25 per cent very much improved, while all the cases save one had improved. All gained in weight, the average weekly gain being 1 lb. 4½ oz. But I am not here to offer proofs of the efficacy of this treatment. It is too late in the day for that, because it is an established fact that, when carried out with due care and discrimination, it yields excellent results, as most of you, from experience among your own patients, must have had the opportunity of verifying.

There is only one point in this excellent treatment which, in my opinion, is open to criticism. I offer no objection to patients taking exercise in the midst of rain or snow, and



getting drenched; but I cannot see how much can be gained by allowing them to sit in their wet clothes on returning home. It may be quite true that, as a rule, they do not suffer therefrom, and that it constitutes a part of the "hardening" process; but this may be carried too far, and I am of opinion that, whatever the ailment may be, or even if there is no ailment at all, there is always a certain risk which it seems unnecessary to run, while any advantage to be gained must be very small.

And now, in conclusion, it remains for me to give my view of the kind of provision which should be made for the treatment and relief of the tuberculous poor, and which you probably have in a measure gathered from what has been already said.

A good many years ago, being much impressed with the advantages to be derived from sea voyages, and from residence in high mountain valleys, I conferred with some of my richer friends with the view of raising a fund to be spent, not in stone and lime, but in sending patients abroad. They went into the matter with great cordiality, but, on consideration, the conclusion arrived at was that it was too large an undertaking, and beyond the resources of private effort. But it is not beyond the resources of the local authorities, and it is a question whether, in certain selected cases at all events, the tuberculous poor should not be dealt with in this way. It has been calculated that the average cost of each phthisical patient in a sanatorium cannot be less than fifty pounds, while, in the case of a nursing sister who was formerly connected with my wards, and who, on becoming consumptive, was sent to Colorado, the sum expended was much less than this, and yet it resulted not only in her restoration to health, but also in a very material improvement in her position.

And, again, a man who has had some experience of a seafaring life might, in the early stages of the complaint, readily secure a berth on board ship, where he would have a good chance of recovering his health while earning a "living wage." But, even if he went simply as a passenger, the cost need not exceed that of residence in a sanatorium. For the majority, however, it appears to me that the time has come when sanatoria should be erected, in suitable localities, at the public expense, on the same lines as those which are springing up on all sides for the relief and cure of the wealthier classes. The initial expense will doubtless be considerable, but the restoration to health of thousands of the working classes, especially in the case of the heads of families, must ultimately lead to



economies in other directions. But even were it not so, surely no one would grudge the cost if it conduces to the health, and happiness, and prosperity of those who are not in a position to help themselves. I am, therefore, in full agreement with the *Glasgow Herald* when it says in a leading article—"So far as the parish authorities and the ratepayers are concerned, it is more economical—as well as more humane—to assist the lowly breadwinner to restored health than to let him die, and to be afterwards called on to maintain his widow and children."

This fact has been so fully brought home to three of the urban bodies in the vicinity of Liverpool as to have led them to erect and maintain a sanatorium for the treatment of the poor suffering from consumption.

It appears that the Glasgow Parish Council has been considering the propriety of making provision for phthisical patients in their new hospital at Stobhill, but, as Dr. Erskine has well remarked, "such an arrangement will not prove satisfactory to the great body of working people, who, very naturally, object to the stigma of pauperism." And he has further pointed out that in 1881 the local health authority resolved "that all classes of citizens suffering from infectious disease should be treated in hospital, without any charge being made therefor."

It having been proved that tubercular disease is infectious, the logical sequence is that provision should be made for its treatment by the municipality, and not by the Parish Council. And, judging from past experience, I have perfect confidence that, if we can satisfy the members of the Town Council and of the health committee that consumption can be cured by the means which have been indicated, they will take up the matter with their wonted enthusiasm, and carry it to a successful conclusion. And if this should be the result, we—the working members of the medical profession—will feel that our labours have not been in vain, and will ever be grateful to them for supplementing our efforts to improve the health of the community, and to add to the sum of human happiness.

#### **B. THE TREATMENT AND RELIEF OF THE TUBERCULOUS POOR.**

BY DR. JOHN LINDSAY STEVEN.

On 18th December, 1891, I had the honour of being called upon in this Society, under the presidency of the late Professor Joseph Coats, to open a discussion upon the subject of "Tuberculosis as an Infectious Disease," which was fully

reported in the *Glasgow Medical Journal* for January, 1892. This discussion led to important practical results, which were not confined to Glasgow. The exhaustive report which, as the result of this discussion, Dr. J. B. Russell drew up for the Health Committee of the Corporation of Glasgow, and which was published in 1896, has had far-reaching results, and was especially appreciated in the United States of America. In the nine years which have intervened, the attitude of the medical profession towards the question of tuberculosis has somewhat changed, and the character of this change of attitude is well illustrated by the subject of the discussion upon which we are now engaged. In 1891 we aimed not only at convincing the body politic of the infectious quality of tuberculosis, but also at the practical demonstration to a section of the medical profession itself of the truth of this doctrine. That this attempt was successful is proved by the change of attitude with which we approach the matter to-night.

Even in 1891 the important question of the prevention and treatment of tuberculosis emerged almost inevitably as a result of the discussion then held; but the question of prevention and treatment was an incidental, and not the chief aim of the debate. Now, it may be admitted that the thesis of the previous discussion has been proved and generally accepted, and that our chief concern at present is to deal in a practical manner with the larger matter of the relief and treatment of the tuberculous poor, but can we hope that the object of our present discussion will be so easily and rapidly attained? The difficulties are undoubtedly great, but not, let us hope, insuperable. Let us remember how many years of patient labour and research were necessary before the practical demonstration of the infectious nature of tubercle was possible, and, remembering this, let us not despair if our progress towards practical and generally applicable measures of relief and prevention seems to be somewhat slow. A remark of Sir William T. Gairdner, who took part in our previous debate, may here be recalled as containing the gist of our contention at that time. He said—"He went with Dr. Steven, and assented to, and agreed with, his views on the infectious nature of tuberculosis. He thought it was impossible to have considered the question in the light of what had come from Villemin, and also been shown by Cohnheim, even before the discovery of the bacillus, and finally proved with almost mathematical precision by Koch, and not to conclude that tubercle is an infectious disease. Nay, he was in the habit

of putting it even more strongly—that tubercle was the one disease whose infectiousness was established by irrefutable evidence.” This statement, coming from an authority so eminent, and a clinical observer so keen and practical, as Sir William Gairdner, cannot fail to carry the greatest weight. Tuberculosis is an infectious disease, and therefore all our efforts at relief and treatment must be founded on this conception of its essential nature.

Before passing on to speak of the provision for the treatment and relief of the tuberculous poor, it is essential to refer briefly to the great practical difficulties which surround the subject. Perhaps the greatest difficulty of all is the tremendously widespread prevalence of tubercular disease; the enormous number of persons who, in some way or other, are affected by the various forms of tuberculosis. The numbers are so great that practical men almost instinctively shrink from the magnitude of the task set before them. I remember well a conversation I once had with Sir William Gairdner on this point. On my referring to the provision for the tubercular poor as a subject of legislative enactment, he remarked that he was afraid the tubercular members of the community might outvote their healthy brethren if the question ever came to a division. Such a remark, from such a source, is a sufficient illustration of one of the greatest difficulties in our way.

Another difficulty is the attitude of our general hospitals and infirmaries towards tubercular disease. Tubercular patients are now, as far as possible, being systematically refused admission to general hospitals. This applies more especially to phthisis pulmonalis, but also, though in a more limited way, to cases of chronic surgical tuberculosis. The necessary result is that great numbers of the tubercular poor are left without sufficient medical or surgical relief.

There are, perhaps, two reasons which may be urged in support of such a policy on the part of our large general hospitals. First, there is the recognition of the infectious quality of tuberculosis, and the resulting fear that the admission of tubercular patients may prove a source of danger to the other inmates of the ward. This, however, is a danger the importance of which may very easily be overestimated. In 1891, Dr. Alexander Robertson, speaking from a lengthened experience, expressed his conviction that the danger was not great, and in so speaking I believe he expressed the opinion held by many medical men, among whom we may, perhaps, include Dr. J. B. Russell, as judged by the statements in his

classical report. But though the danger be slight, I think it must be admitted to be real.

Lately, in association with my colleague, Dr. T. K. Monro, I have been called upon to examine nurses affected with tuberculosis of the lungs, with regard to whose cases it might, perhaps, not unreasonably be inferred that the disease had been contracted in the discharge of their duties. From the prolonged period of incubation of tubercular disease, it is not easy to demonstrate its directly infectious nature, but we are almost bound to admit that tuberculosis, like leprosy, is a "communicable disease."

The second reason for the present attitude of the general hospitals towards tuberculosis seems to me to be found in the fact that for the most part tubercular patients are not benefited by treatment in general wards. It follows, then, for both of these reasons, that the cases must be provided for elsewhere.

A third difficulty, which must on no account be overlooked, is found in the circumstance that, in the earlier and intermediate stages of tuberculosis (stages, I freely admit, which it is almost impossible accurately to define or to demarcate), the patients are frequently not in a condition to lead them to believe that they require constant or prolonged medical supervision, and especially such rigorous medical supervision, as entrance into a public institution implies. Here, as in the treatment of chronic alcoholism, the fact of the liberty of the subject has to enter into our considerations. There is no such virulence or rapidity of action in the infectious quality of tuberculosis as must be reckoned with in the case of a disease like small-pox or bubonic plague, which would justify the rigorous application of the enactments of sanitary law. A consideration of this point renders it evident that it must be very difficult to formulate any method for the compulsory treatment of tuberculosis, founded on the different stages of the disease as they are met with in the same or in different individuals.

When the Council of the Society were making the preliminary arrangements for this debate, it was suggested that the opening speakers might take up the subject with special reference to the early, the intermediate, and the late stages of the affection. But on thinking over what I should say, it appeared to me, in view of the important considerations involved in the question of the liberty of the subject, and the difficulty of defining the different stages, that it was better to proceed on general lines. It must be clear to every physician of experience that, in the earlier and intermediate stages of



tubercular disease, patients are frequently met with who are compelled to work and play their part in every-day society, and who may safely do so without undue danger to the health of their neighbours. A consideration of the stages of the disease, then, does not help us very much in our present endeavour. No longer than a week ago, on the same day, I saw in consultation two cases of tubercular disease of the lungs which illustrated well the difficulty of which I am now speaking.

One case was that of a girl, who had been acutely ill for a month, and who previously had never been seriously unwell or unable to follow her occupation. When I saw her it was obvious, both to her medical attendant and to myself, that she was suffering from acute general tubercular disease of the lungs, and was already within measurable distance of death. The other case was that of a young man, aged 26, who was evidently in *articulo mortis* from pneumo-thorax, the result of a ruptured cavity, and who died the day after I saw him. Yet, in spite of an open tubercular sinus in his neck, and widespread chronic tubercular disease of his lungs, the presence of which was well known to his doctor, he had been vigorously engaged at his work as a measurer until a week before his death. And it must also be stated that he was so successful in his work, and so useful to his employers, that quite recently he had been promoted in his office, and had received a substantial addition to his salary. Such cases are frequent in the experience of all medical men, and render it evident that the tubercular patient must often, from stress of fortune, continue at his labour and mingle among his fellows to the end.

I might also, in this connection, refer to the difficulties of diagnosis in the earlier stages of tubercular disease, but perhaps this may be left to subsequent speakers.

Well may we admit that the task set before us is no light one; but surely the difficulties are not insuperable. I think not. Indeed, I believe that the difficulties are even now being successfully grappled with. The effective treatment of the tuberculous poor means the prevention of tuberculosis. The relief of the fever-stricken patient means the prevention of fever; and so, indeed, it has proved in the case of the specific fevers. I believe that the first step in the treatment and relief of the tuberculous poor has already been taken. I mean the first step of driving home to the professional and public mind the conviction that tuberculosis is a preventable disease, and ought to be prevented. One evidence of this first step having been taken, is the foundation of the National Associa-



tion for the Prevention of Tuberculosis, an association which has roused the public conscience in the matter. The gravity of the situation, and the urgent necessity for concerted action, are everywhere fully recognised, from the steps of the throne itself to the very thresholds of the poor. The pages of the great medical periodicals are full of the subject, and from week to week a record of progress is made. The difficulties, indeed, are great, but the situation is not without hope.

There are, it seems to me, two ways in which the provision for the treatment and relief of the tuberculous poor may be attempted:—

1. By private beneficence and charity.
2. By state or municipal provision.

As examples of the first method may be mentioned the numerous charitable institutions which the benevolent have founded for the treatment of the tubercular poor. The work accomplished by such institutions is good, and its value is great in several ways. They point out the direction in which further effort must proceed; they satisfy the humanitarian and benevolent instincts of the community; they supply practical training schools for medical men; and, most important of all, they afford medical care to large numbers of the tubercular poor. Such institutions deserve every encouragement and support, but the limitations of their usefulness must never be forgotten.

Such benevolent and charitable effort touches only the hem of the voluminous mantle of tubercular disease which envelopes humanity. Benevolence, however princely, and charity, however kind, can never remove that mantle and clothe humanity in a garment of health. So far as charity is concerned, tuberculosis, like the poor, must always be with us. Infected individuals may be relieved and cured, but something more than the relief of individuals must be aimed at.

In thus speaking of the existing provision for the cure of the tubercular poor, the valuable part played by the general practitioner of medicine in crowded cities and in sparsely populated country districts must not be forgotten. When infirmaries faint and sanatoria fail, the cry of the poor is ever to the general practitioner in their midst, and to the credit of the doctors be it said the cry is not in vain. Their ready help and their sagacious advice are frequently the only comfort of the man mortally stricken with tubercular disease, and so long as society is constituted as it now is, the part played by the practitioner of medicine must always be a most important one in the fight with tuberculosis.

While accepting all the help that charity can afford, and that medical men can give towards the treatment and relief of the tuberculous poor, it is every day becoming more and more clear that we must turn to the central government, to the county councils, and to the municipalities of our country for effective help. In no other way can we hope to produce that effect upon tuberculosis which may ultimately lead to its being stamped out. And how are our sanitary authorities to proceed in the campaign against tuberculosis? I have spoken so long that I can now do little more than indicate the provisions which we might naturally expect the State to supply. None of the propositions which I now place before you can be regarded as new or original, all of them in some form or other have been suggested before, but they may afford material for subsequent discussion. There may be other means of providing for the effective treatment of the tubercular poor, but these I am about to mention, I think, are essential. Further, I may add that I do not think we are yet arrived at the stage at which anything like legislative legal compulsion can be applied to the personal medical treatment of the tubercular man. The following are suggested provisions:—

1. Means for educating the public as to the true nature of tubercular disease, and as to the means to be adopted for its prevention.

2. The institution of some measure of notification. Compulsory notification will not do, but already efforts at voluntary notification are being made.

3. The provision of sanatoria, supported by the rates, to which all the tubercular poor would have the right of entrance in hope of cure.

4. The provision of homes of rest for hopeless and dying cases.

5. The disinfection of dwelling-house, bedding, and clothing after death from tubercular disease has occurred.

6. The stringent enforcement of general sanitary law, especially with reference to its bearing upon tubercular disease.

These are some of the provisions which the State might make for the efficient treatment and relief of the tuberculous poor, and I think we are already in the way of having them, at least, partly accomplished. The expense and the trouble of carrying out such provisions will necessarily be enormous, but the result, as expressed by the improved health and vigour of the people, will prove that the money has been well spent, and the great labour not in vain.

C. MUNICIPAL POLICY IN RELATION TO TUBERCULOSIS: THE  
TREATMENT AND CURE OF ADVANCED CASES AMONG THE  
TUBERCULAR POOR.

BY DR. A. K. CHALMERS.

It is possible here to take many things as accepted, which before a lay audience it would be necessary to support by some appeal to argument. But at the outset it is desirable to distinguish between the two great classes of tubercular disease—(1) pulmonary phthisis, and (2) the tubercular diseases which are not phthisis (*tabes mesenterica*, tubercular meningitis, acute phthisis or generalised tuberculosis); thus distinguishing in a general way between the tubercular diseases of childhood and those forms which most prevail in adolescence and adult life—although there is evidence which I believe could be largely increased from the pathological records, that phthisis in the first year of life is more common than is generally accepted. In the main, however, the general distinction is accurate, and the next point for consideration is the local distribution of these two classes. It might readily be surmised that both classes would exist in a community side by side—that where phthisis was most prevalent, there also we should have the greater incidence of the other forms; but any evidence at present available on this point does not support this impression. Phthisis is relatively most prevalent when the general death-rate is greatest, but one might point to several districts in our own city where a high death-rate from phthisis is not associated with a corresponding incidence of the other forms. This disparity in the distribution suggests a difference in the source of the infection, and it is further emphasised by the different direction in which the death-rates of the classes are at present moving. The death-rate from phthisis is decreasing, while that from the other forms, if not stationary, has still not shown any corresponding decrease. The application of this fact would seem to be that while phthisis may perpetuate itself by causing phthisis in others, it is not to be held responsible in any great measure for those other forms of tuberculosis which we have seen chiefly affect the earlier years of life.

The argument here is obviously in the main statistical—in essence it can scarcely be anything else, but it is evidence such as this which has paved the way for the conviction that the tubercular diseases of early life are related to food, while one form of tubercular disease which, above all others,

predominates in adult life, *i.e.*, phthisis, is not. Here, then, is a definite line of partition by which preventive action may be guided, but the action follows diverging lines. It ends, in the one case, in supervision of food supplies; in the other, it is concerned more definitely with the conditions under which the individual lives and works, and it is to this latter that the following remarks apply.

We are agreed, I think, (1) that phthisis is communicable, and therefore preventible; (2) that heredity plays an unimportant, and individual susceptibility a considerable part; (3) that susceptibility can be acquired under certain fairly defined conditions; and (4) that in probably an increasing measure the disease is curable.

Inherited susceptibility has long been recognised; acquired susceptibility is produced under fairly defined conditions. Phthisis has a recognised place in the diseases of occupation, and the increased relative prevalence of the disease among males during the last thirty years is one of the most striking changes which the Registrar-General's returns afford.

It would lead me far from the intention of the present discussion were I to occupy your time with any consideration of the conditions which tend to produce susceptibility in the workshop or dwelling. We know that no race of mankind is free from the disease, or rather that men of every race, under given conditions, may acquire it. The causes, therefore, are to be regarded as peculiarly local, and it is those local conditions which it is the duty of a local authority to combat.

*Mr. Motion* said that 312 cases of phthisis pulmonalis were admitted into the hospitals under the Glasgow Parish Council during the past six months. The Council had arranged to erect new hospitals capable of accommodating over 1,300 patients. These hospitals were to be apart from the poorhouses, and phthisical patients were to be treated in special wards. The Council was also arranging to build wards for the treatment of insane phthisical patients in Gartloch and Woodilee Asylums.

*Dr. Dougan* said the Public Health Committee was endeavouring to prevent the introduction of tubercular meat and milk. It had succeeded in the case of the meat, but not with the milk. The Corporation is willing to do anything that can be done to prevent the spread of tuberculous diseases. The members of the Council depend on medical societies for information, and they will not grudge money.

*Bailie Anderson* said we should educate phthysical patients to destroy their sputum. We should stop all milk from tubercular cattle, and get more power to deal with tubercular cattle. He was not in favour of municipal sanatoria, but he was in favour of voluntary notification and cheap houses.

*Bailie Steel* said if phthisis pulmonalis is an infectious disease, then phthysical patients should be isolated, but the cost would be so great, and the rates were so heavy, that he was afraid there would be an outcry against it. If the people cared to pay, he was in favour of municipal authorities building hospitals for the treatment of phthisis.

*Dr. Carswell* said we must take into account the prevalence of this disease. In the early stages of the disease a man is perfectly able to follow his usual employment, and it would be hard to compel such a patient to enter a sanatorium, but he was in favour of compelling all advanced cases to go into an institution. Suitable accommodation was being provided in parochial hospitals for phthysical patients, and he thought the people would by and by be willing to enter these institutions just as willingly as they go into parochial asylums or infectious hospitals.

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MEETING X.—8TH FEBRUARY, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

ADJOURNED DISCUSSION ON THE "PROVISION FOR  
THE TREATMENT AND RELIEF OF THE TUBER-  
CULOUS POOR."

*Dr. Erskine* held it was the primary duty of local health authorities to ascertain the extent of the prevalence of phthisis pulmonalis, and to discover and deal with individual cases. While all forms of tubercular disease ought to be included, it would be most practicable to begin with tuberculosis of the lungs, as that disease was clearly defined and admittedly infective. Information was already being obtained by local authorities in regard to the occurrence of cases of phthisis. The medical officer of health for Glasgow already received notification of consumption in several ways—



1. The services of the sanitary department had been placed at the disposal of the ratepayer for the purpose of carrying out the necessary washing and disinfection in any house in which a patient had died from consumption, or from which he had been removed to hospital. Additional knowledge regarding tuberculous cases was obtained by offering similar assistance in the way of disinfection and washing where such patients suffered from any discharge.

2. Another means of notification of phthisis had been instituted by the appointment of a bacteriologist to the Corporation of Glasgow. Practitioners within the area of the city were invited to send samples of sputa from suspected cases, accompanied by name and address. The discovery of tubercle bacilli thus established a diagnosis, and notified the existence of a particular case.

3. A form of voluntary notification had been initiated by the Health Department authorising Dr. Chalmers to issue schedules to public medical establishments, such as the parochial hospitals and dispensaries, and the larger charitable institutions such as the Royal and Western Infirmaries and dispensaries, requesting the medical officers to make a return of the patients suffering from consumption, giving names, ages, and addresses. The notification obtained from such institutions would be especially valuable, for the reason that a large proportion of the patients resorting thither belonged to the class who were not likely to have had any private medical attendance.

The medical officer for the city had even now gathered together much important information in the way of notification from the sources indicated, but from lack of assistance he had been hitherto unable to utilise it in the way of dealing with individual cases. For this special class of work a medical man should be at once added to Dr. Chalmers' staff.

Dr. Erskine advised voluntary notification by medical practitioners, with sanction of patient and others concerned, as had already been adopted by the health authority of Manchester. Payment of a fee should be made in each case, equal in amount to what was given for presently notifiable infectious diseases.

Compulsory notification was not only inadvisable, but quite unnecessary at present, as sufficient information was practically obtainable to enable local authorities to make a good beginning in dealing with consumptives. The excuse of lack of knowledge on the subject pled by members of representative public bodies arose from an exaggeration of the financial difficulty, and

prompted a policy of delaying action as long as possible. From the point of view of infection, it was clearly within the province of the local health authority to find the cases of phthisis and deal with them in the public interest. In a large proportion of such cases, supervision would only be required, as the patients would be able to attend to their ordinary duties. In respect to removal and isolation, consumption is not comparable to the infectious fevers. Health authorities are disinclined to face the work of dealing with consumption, owing, primarily, to the magnitude of the undertaking, which they willingly exaggerate by imagining the necessity for removal and isolation of *all* patients in hospitals and sanatoria for long periods of time.

Provision should be made by the municipality for the isolation of such chronic patients as are living in overcrowded houses, and are constant sources of danger to the community. Advanced and hopeless cases should be removed to a hospital provided by the rates, with a view to preventing the disease by removing so many potential foci of infection. The Health Committee of the Corporation of Edinburgh had recently made a definite recommendation that one hundred cases of patients in the last stages of consumption should be provided for in the wards of the present infectious diseases hospital, soon to be vacated on the opening of the new fever hospital.

Dr. Erskine explained what the Glasgow Health Committee had done and were presently doing in the way of preventing tuberculosis. As a local authority, that was their special function in health administration. In recent times, a more stringent enforcement of sanitary law had been carried out. Drainage, ventilation, lighting, cleanliness of stairs, lobbies, and closes, hose-washing of streets, lanes, and back-courts, had been much more extensively attended to. The Corporation sub-committee on tuberculosis, among other proposals, had strongly recommended that the minimum space in dwellings for each adult should be raised from 400 to 500 cubic feet, and that the statutory space in workshops should be increased from 250 to 400 cubic feet. Of course, the carrying out of such regulation would displace a considerable number of people from one apartment houses, and the question arose—Where was the necessary house accommodation to be got except by moving a considerable portion of the industrial population into the country?

Spitting, acknowledged to be the most dangerous mode of spreading infection among the travelling public, was now punishable as a police offence in tramway cars, but as yet very

few prosecutions had taken place. The notice in reference to spitting in the cars should be much more prominent than at present.

The abatement of the pollution of the atmosphere by black smoke had been receiving the earnest attention of a special committee of the local authority in Glasgow, and already considerable improvement had been effected. Two qualified engineers had been appointed as inspectors, acting under the chief sanitary inspector, who were engaged not only in detecting offenders, but in advising reasonable and necessary alterations as to stoking and furnace construction. That course had been found preferable to bringing offenders before the magistrate, who could only inflict a small fine, which was not sufficient to deter them from repeating the nuisance. Of course, a prosecution was always instituted when other means of abating the nuisance failed.

A great reform had recently taken place in Glasgow in the inspection of meat. Instead of that being done, as formerly, by a few police constables, a staff of four veterinary surgeons and twelve qualified lay inspectors had been engaged to act under the health committee and the medical officer of health. Tuberculous carcasses of cattle, sheep, and swine were now seized which would formerly have been sold to consumers.

The inspection of milk, a much more dangerous medium of carrying tubercular infection than meat, was, as yet, not receiving the attention it called for. The only milk that was produced and distributed under fairly satisfactory conditions in relation to the prevention of tuberculosis was the supply to the municipal fever hospitals.

It was the duty of sanitary authorities, in reference to the prevention of consumption and other forms of tuberculosis, to educate public opinion on the importance of the subject. Medical officers of health, sanitary inspectors, and veterinary surgeons acting under local authorities should disseminate information and advice to the general public, cow-keepers, and the dairy trade by means of pamphlets and handbills. Illustrated lectures delivered by qualified persons, under the auspices of local authorities in town and country districts, would form a convenient and valuable means of popularising knowledge on the general aspect of tubercular disease in man and animals. One of the best means of educating the people as to the prevention of the spread of tuberculosis of the lungs was treatment of phthisical patients in properly appointed sanatoria, as such patients during their stay would be fully instructed as to how they were to conduct themselves in

relation to their neighbours and fellow-workers after they had sufficiently recovered to be able to leave those institutions.

It was desirable that provision should be made for the treatment and relief of consumptives by one central local authority. Parochial councils were already providing such accommodation, but such provision was objectionable owing to the stigma of pauperism which it incurred. The objection was a sentimental one, and was unreasonable, as a patient was just as much pauperised by removal to a municipal fever hospital as by admission to a parochial institution, both being supported by public rates. As the municipality in its capacity of local health authority had imposed on it the duty of carrying out preventive measures and obtaining notification in reference to consumption, it should assume, in continuity of these functions, that of supervision of tubercular cases, sorting them out as to how and where they could best be dealt with, and providing sanatoria as well. The poor-law authority must co-operate with the health authority by accommodating cases of destitution or poverty, often the direct result of the chronic character of the disease.

If the municipal corporation, as a central local authority, assumed the responsibility for the relief and treatment of consumptives suffering from phthisis pulmonalis, as well as for the prevention of this disease, then all classes of ratepayers would be included. Wealthy and prosperous people would, of course, be eliminated, as they would be able to make the necessary provision for consumption occurring among the members of their own class or rank. For all classes between the wealthy and the destitute provision would have to be made by the municipality for the treatment of suitable cases in sanatoria or hospitals supported by public rates. Such charitable institutions for the treatment of consumption as presently exist, either as special sanatoria or with special pavilions or wards connected with general hospitals, might be subsidised by grants from public funds on condition of adequate representation on the boards of such institutions from the local authorities making such contributions.

*Dr. Allan* said—I gather from the statement which was made to us at last meeting by Mr. Motion, that ample hospital accommodation will be provided in the near future for *pauper poor* who are affected with phthisis. As to the consumptive poor who are *not* paupers, and who are in the *early* stage of the disease, provision is being made for them at the sanatorium, Bridge of Weir. There still remains a section of sufferers



whose claims are strong, and yet for whom there is no provision. I mean the poor who are *not paupers*, and who are in the *advanced* stage of phthisis. Such cases are practically excluded from our general hospitals because they are infectious, they are not wanted at a sanatorium because they are regarded as incurable, and they decline to go to the parochial hospitals because they are not paupers. It seems clear to me that this is the class of cases for which immediate provision should be made by erecting an "hospital," or "home," or "rest," where they would receive skilled treatment, and have their sufferings relieved. (Of course, the hope of a possible cure would not be lost sight of even in these bad cases.) I propose that this "hospital" or "home" should be composed of comfortable wooden huts or small pavilions, and that it might be erected in a corner of one of our public parks. There need be nothing depressing about the appearance of such an hospital. Let the huts be painted in bright, cheerful colours, and surrounded by trees, shrubs, and flowers. If necessary, it could be cut off from view by a belt of trees. It might be built and maintained by the municipal authority on the ground urged by Dr. Erskine, namely, that it is a provision for the isolation and treatment of a form of infectious disease; or it might be created and supported by private charity and voluntary contributions.

It is to be borne in mind that in thus separating the *advanced* cases of consumption from crowded localities and crowded houses, we would be taking a very important step in checking the spread of the disease. It seems clear to me that if we keep our attention concentrated on the question of providing for this class of cases (*i.e.*, the non-pauper tubercular poor in the advanced stage of the disease) we will very much narrow the scope of this discussion, and be more likely to come to some definite conclusion.

*Dr. Alex. Robertson* made the following suggestions:—(1) Voluntary notification to the public authorities; (2) improve the dwellings of the artisans; (3) prevent spitting in public places; (4) prevent contamination of food by the disease; (5) treat the tubercular patient of the artisan class in public sanatoria.

*Bailie Dick* said that, in the meantime, voluntary notification was needless, as we were not in a position to deal with tuberculosis. He was in favour of an institution where the advanced cases would be admitted and allowed to remain



until they died. If the people were willing to provide the money, he was also in favour of public sanatoria for the treatment of the disease.

*Councillor Mitchell* thought if we improved our workshops we would considerably diminish the number of cases of tuberculosis.

*Dr. Ness* said the advanced cases of tuberculosis ought to be removed by the municipal authorities, and the cases suitable for treatment ought to be taken into country branches of general hospitals.

*Mr. H. E. Clark* made the following proposal, which was adopted:—"That this meeting of the Glasgow Medico-Chirurgical Society is of opinion that there should be formed in Glasgow a branch of the National Association for the Prevention of Consumption and other forms of Tuberculosis."

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#### MEETING XI.—15TH FEBRUARY, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

#### I.—THREE AND A HALF YEARS' EXPERIENCE OF FARADISATION OF THE HEAD, ON SCIENTIFIC PRINCIPLES, IN THE TREATMENT OF CHRONIC INSOMNIA AND ASSOCIATED NEUROSES, COMPRISING A SERIES OF FORTY-SIX CASES.

BY DR. SAMUEL SLOAN.

By the profession in general the electric treatment of internal disease or disorder is still looked upon with doubt, even when those who practise it are not looked upon with suspicion. In the latter case this suspicion is not extended to those who, when everything else fails, feel that they must "try electricity," and who, although to the best of their ability, yet do so in a perfunctory, half-hearted, and fitful manner, knowing little of its laws and less of its *modus operandi* in organic disease or in functional disorder.

In such circumstances no record of results is kept, and thus no advance in electro-therapeutics is made. But the advance of this science is no less hindered by the electro-therapeutic

enthusiast, who, having made up his mind that electricity, because it has in some cases seemed to produce wonderfully satisfactory results, concludes that it is therefore able to do anything; his patients frequently assisting him in keeping up this delusion. His zeal, without knowledge, is soon discounted by his medical brethren. By those who believe in his honesty his work is looked upon kindly, but unsympathetically; whilst by those who have previously suspected his honesty it is looked upon with disapproval and contempt.

The fact that much has been written on electric treatment of disease adds, I fear, little to its favourable reception. This result probably, in part, arises from the feeling I have referred to; and so electro-therapeutics has, even in the present day, little chance of being put fairly on its trial. Nor is this to be wondered at, for, unless in cases of muscular wasting, few impartial records have been published which could be said to reduce the treatment to something of the nature of clinical research, and thus render some help towards the advance of electro-therapeutics. To do something in this direction is the object I have had in view in bringing this paper before you to-night. I come with no theories, and have no text-book facts to advance. I simply submit to you notes of my own work in this line during upwards of three years.

I have tried to record honestly what I observed. Some of the work was discouraging, some the reverse. You have it all here. My paper deals with facts. If any of you can shed light, by your remarks, on this work I have undertaken, I shall be most grateful. I am to-night limiting my remarks to the application of electricity to the treatment of insomnia and some associated disorders. This subject is, perhaps, more interesting in the present day. One evidence of this is seen in the numerous so-called infallible and safe remedies being introduced by chemists, and lauded by probably sometimes sincere seekers after truth in our own profession. Faith in the efficacy of these drugs, however, is losing its hold on us, as is evidenced by the advice, more frequently given now, to lead a healthier life so that fewer drugs may be required. Indeed, it has occurred to me as not improbable that the frequent use of these drugs is not only a source of physical danger, but a cause of many a mental breakdown. Warnings are often, however, in vain, for, the insomnia having become chronic, a cerebral habit has been acquired, and the removal of the cause in part, or even in whole, may still leave the sleeplessness a heritage less easily got rid of.

My first experience of sleep arising from the application of

electricity came to me as a surprise. I was unprepared for it. I might have seen something about it in text-books, but, like most of you, if I had I should most likely have been very sceptical as to its frequent efficacy.

I had observed that when applied to other parts of the body the patients sometimes volunteered the remark that it made them sleepy. I thought if this were the case that I might get more benefit from it in this direction by applying it to the head. I certainly could not have got this hint in text-books on electro-therapeutics, so far as concerns the faradic current (that with which I was then and have since been mostly working), for in Althaus' interesting and suggestive book on *Failure of Brain Power* he barely mentions faradisation as a therapeutic measure of any value, confining his attention wholly to the use of the continuous current. Professor Rockwell, again, in referring to the electric treatment of insomnia, speaks of general faradisation and of galvanisation only in the case of the head; nor does Bigelow, in *An International System of Electro-Therapeutics*, mention faradisation of the head as having been even tried for this purpose.

The general impression, even among electro-theraputists, is that the faradic current is an irritant when applied to the head. Indeed, a well-known London physician, who has devoted a considerable amount of time to the use of this agent in nervous diseases, has informed me that he once used this current to the head of a patient for some purpose, and the result was such that he never attempted it again.

As to whether this should continue to be the view of the profession on this subject I shall leave you to judge after you have studied the record of the forty-six cases I am submitting to you. It is important to state that these include *every case* in which I have used it—at least I have not consciously omitted a single case during the last three and a half years—at first in no way selecting my cases, but of late applying it only where I knew from acquired experience what was likely to be the result, or in desperate cases, as in one of my very latest, where I knew I could be doing no harm, and wondered if it might not be possible that some good might follow. I refer to case No. 45.

I have no time, nor have I inclination, to-night to enter into the question of the condition of the brain or its circulation during normal sleep, nor the change therein during sleeplessness or morbid sleep, or in the conditions I have designated accompanying neuroses. Neither shall I speak of the effects

of drugs on insomnia, except to mention that since the beginning of my treatment of insomnia by the faradic current I have in each case made it a rule that all drugs, even tonics, are to be stopped during the treatment. The only conditions I insist on are that for a few hours after each *séance* all mental excitement, or even mental work, should cease as far as possible: that there should be no physical fatigue for a short time after each application: and that the cause of the symptoms, if known, should be, at least in part, removed, if this is possible. Tobacco and alcohol, except in rare cases, need not be wholly stopped, but no excess should be sanctioned.

In cases where the cause is in acute operation at the time, as in Case No. 20, I may try one or two applications, but this is done, as might be expected, with little hope of success. I have always discouraged patients from talking whilst the current is on, and have kept them sitting quietly in the chair for a few minutes after removing the electrodes from the head.

I have mentioned that in my earliest experiences I met with varying success, and that I am not now recording these cases, limiting myself to the work of the past three and a half years. During that time I have had better means of carrying out this treatment on scientific principles than previously, and have been able to utilise my former experience.

My notes in some of the recorded cases may be considered incomplete. As I did not at the time take them so much with a view to publication, but rather for self-instruction, and as I have no time for detailing every case, you must just take the abstract of these notes as they are here given. I believe they are sufficiently complete to answer the purpose. If further information is desired, it can be obtained.

Since most, if not all, my cases have been, not cases of disease but of disordered cerebral function, and that what was being treated was subjective symptoms, I have thought it best to employ frequently the *ipsissima verba* of the patients as indicating the condition before and after the treatment. In no instance, if at all possible, did I suggest answers to my questions when put. Co-existing disease, of course, modified sometimes materially the result, and so, of course, did the nature of the insomnia as well as its cause. If you study the table you will see that some of the cases were purely "psychic," whilst some were "secondary" insomnia, that is, insomnia due to pain or some physical uneasiness.

A most interesting article dealing with this subject, written by Sir James Sawyer, many of you must have read in the *British Medical Journal* during December last. In this paper



the writer deals very fully with the subject in all its aspects, especially with the treatment; and although almost everything that has been or could be tried for the cure of insomnia is there mentioned, the conclusion come to is far from encouraging to those who have followed on similar lines.

Since in this paper not a single mention is made of the action of electricity as a therapeutic agent in insomnia, I may infer that by the profession in general it is practically unknown, or is considered of so little value as not even to be worth mentioning.

My own experience of it, however, during what must, in the light of my table of cases, be admitted as a very extended trial, has convinced me that it is, in some cases, if not the most valuable remedial agent yet recommended, at least a most important adjunct to other measures, and one which no one should now omit to try when ordinary and easily applied remedies have failed; always, of course, on the understanding that it is used in the manner in which it has been employed in these cases I am bringing before you.

I shall delay giving details as to my method of using this agent till I have laid before you my report as to the results of this treatment. I have arranged these results under five heads:—

1. Cases in which the patient—he or she being judge—has been absolutely cured, or practically cured.
2. Cases in which the improvement has been so great as to make the treatment well worth the trouble.
3. Cases in which improvement, though present, has been slight.
4. Cases in which no appreciable result was obtained.
5. Cases in which some harm was done, though this was of a temporary nature only.

I have omitted a column for the cause of the complaint, for if the insomniac is psychic, it may safely be inferred that, in the case of the female sex, this will arise from one, or from a combination, of the following:—Continuous domestic cares, family trials, the pursuit of pleasure, the shock of bad news, and so on; whilst, as a predisposing cause, there will generally be found to be a neurotic temperament, unless where the immediate cause, as mental shock, has been exceptionally severe. And, again, whether the insomnia has been the cause or the consequence of the general disorder of the health, there will usually be found present malnutrition of some sort, as anæmia or neurasthenia, in mild or in severe form. Tea and coffee are usually not to be considered the prime cause to any



great degree, the craving for these, whether as stimulants or sedatives, being already present, and the tea or coffee simply intensifying the morbid condition. In the case of the male sex, the cause will be—singly or together—business worry, ill-regulated or excessively prolonged and anxious work, financial cares, &c., with often tobacco and alcohol, which, though used in part as a remedy, will add to the morbid state of the brain. In my list of cases, there is no one, so far as I know, of what could be called excessive drinking or excessive smoking as a cause *per se*, that is, of an amount of drinking or smoking which, in otherwise perfect health, would have acted as it undoubtedly did, in the morbid condition of the patient. The influence of other conditions of health on the results is shown in the column for co-existing conditions. The table contains a series of forty-six cases, extending over a period of nearly three and a half years—quite a long enough time for a practitioner in trying a new remedy to have passed from enthusiasm to disappointment, back again to cold criticism, and, finally, to some amount of knowledge based on experience.

The conclusions I have come to I shall give farther on, but now I shall read the summary of the work as drawn up in this table (pp. 384-389).

I have tabulated the results in percentages. The table shows that 45·5 per cent of the cases were cured—absolutely or practically; that 32·5 per cent were sufficiently relieved to have made the treatment an undoubted success; that 11 per cent were so slightly relieved as to make the result not worth the trouble involved; that 9 per cent received no benefit, though they were none the worse of the treatment; that 2 per cent were injured, the resulting distress lasting, however, for only a limited time. If we analyse the figures, we will find that the result in the uncomplicated or psychic cases was almost uniformly gratifying, the exception being Case No. 20; and we shall find that where there was a cause for the continuance of the sleeplessness other than a psychic one, the result is usually unsatisfactory. I shall detail a few of the cases, to indicate certain points of interest.

The first is Case No. 6. This one is illustrative of what I might call a good case, in which the result is surprising and satisfactory both to the patient and to the medical attendant; and, as it was one of my earliest, it was of special interest to me. This lady was in good circumstances, staying with, and in charge of, the household of her bachelor brother, a gentleman who had been eminently successful in business, and

who went much into society. His sister, enjoying also this kind of life, had indulged in it to such an extent as, in a lady of highly strung nervous organisation as she was, to bring about the usual result. When she came to me on 8th November, 1897, she complained of having to lie awake for several hours on account of "the fidgets," and getting only six hours at the most of disturbed sleep by the continuous use of "powders." My instructions were that she was to stop the powders at once, and to lead for a short time a moderately quiet life, and I gave her on that day the faradic current to the head in the usual manner, and directed her to return two days later. When she returned on the 10th, she reported that she had had less of the "fidgets" during the night, and had felt fresher during the day, but that she had no more sleep than before. The current was repeated at that visit. On the 12th she reported that she had been still less fidgety, and that she was getting more sleep. On the 15th the report is—"Slept very well since the 12th, practically no 'fidgets' since the first application of the electricity." On 1st December following, she was sleeping so well as to wish for a whole day in bed. On 4th September, 1900, three years later, she returned saying that up till then she had been sleeping soundly. Her reason for returning was that she felt again "run down in spite of getting plenty of sleep."

The next case (No. 9) illustrates the importance of ignoring the fears of the patient for the current. This patient was seven months pregnant when she called. Her previous pregnancy—the first—had nearly cost her her life, and she dreaded what might be in store for her. Her principal complaint was sleeplessness. Her dread of the current was great. I employed extra precautions to avoid a shock, and after being fully under it her terror passed off, and she exclaimed—"Oh! this is lovely; I could sit here all day." This was on 11th January, 1898. As she resided at a distance from Glasgow, I asked her not to return for about a week. Her report on the 19th was that she was sleeping better, but not very well. On the 26th she reported that she had been sleeping much longer, and she was so well that I said she was to return only if the sleeplessness returned. This improvement continued till a confinement—the third—in February, 1900, a period of two years. Since that date she had been very nervous and irritable. "In the fidgets during the day, and sleepless during the night." I gave her one application of the current to the head, which sufficed to make her "nerves better" again.

## FORTY-SIX CASES OF CHRONIC INSOMNIA AND ASSOCIATED

NO. OF CASE.	DATE.	SEX.	AGE ABOUT	COMPLAINT.	CO-EXISTING CONDITIONS (IF ANY).
1	29/9/97	M.	40	Giddiness ; sickness ; sleeplessness.	...
2	12/10/97	F.	34	Mental excitement ; sleeplessness.	...
3	12/10/97	F.	38	Sleeplessness ; nervousness ; sulphonal every night for several years.	Epilepsy.
4	22/10/97	M.	40	Headaches and sleeplessness for 18 months ; average sleep, 4 to 5 hours.	Worry ; tobacco.
5	2/11/97	F.	45	Headaches ; fitful sleep.	Business cares.
6	8/11/97	F.	40	Sleeplessness for 6 months.	Too frequent social functions.
7	6/12/97	F.	40	Sleeplessness.	Domestic anxiety.
8	24/12/97	M.	30	Headaches ; sleeplessness.	Eye trouble, &c.
9	11/1/98	F.	28	Very sleepless and nervous.	Pregnancy.
10	17/1/98	F.	44	Very, very sleepless ; average, 2 to 3 hours.	...
11	4/2/98	F.	33	Sleeplessness and nervousness.	Dyspepsia.
12	8/2/98	M.	45	Giddiness, shakiness, and sleeplessness.	...
13	15/2/98	F.	34	Headaches and nervousness.	Endometritis ; eye strain.
14	20/2/98	F.	7	Sleeplessness and perpetual restlessness day and night for a long time.	...
15	15/3/98	M.	35	Very nervous and very sleepless ; quite unable for work.	Temporary glycosuria.
16	26/4/98	M.	14	Sleeplessness habitually for past 3 years ; lying awake from 3 to 5 hours ; headaches of late due to shock.	Cardiac disease ; eye strain.
17	4/5/98	F.	42	Nervous headaches from mental strain.	...

NEUROSES TREATED BY FARADISATION OF THE HEAD.

NO. OF APPLICATIONS.	REMARKS.	DATE.	FINAL RESULT.
2	An excellent sleep and less giddiness.	30/9/97	Greatly improved.
1	Much calmer day after.	13/10/97	Slightly improved.
6	Thought it disagreed, but was able soon to sleep without sulphonal.	...	Slightly improved.
6	"Slept fairly well during the treatment; gradually got better after; now sleep soundly all night."	6/2/01	Absolutely or practically cured.
6	"Certainly much better since the treatment."	5/2/01	Greatly improved.
6	Case reported below.	...	Absolutely or practically cured.
?	"Did me a lot of good at the time."	21/1/01	Greatly improved.
10	General condition much better, but improvement less satisfactory since electricity was stopped.	2/9/98	Greatly improved.
3	Case reported below.	...	Absolutely or practically cured.
5	"Not much effect at the time, but natural sleep began to return from beginning of treatment, and this has practically remained ever since."	5/2/01	Absolutely or practically cured.
4	"Sleeping and eating splendidly, and much less nervous. What a difference I feel!"	25/2/98	Absolutely or practically cured.
24	Case detailed below.	...	Absolutely or practically cured.
15	"Very, very well, and very busy." "The electricity did me a lot of good."	11/5/99 5/2/01	Absolutely or practically cured.
3	Report from mother:—"The effect was at first to make the restlessness worse; by and bye restlessness stopped and sleep returned. The child since can sit still, and even stand like a soldier for 20 minutes."	8/9/98	Absolutely or practically cured.
3	Sleeping better, and less nervous.	21/3/98	Greatly improved.
19	"Great benefit from the electricity; rarely troubled with sleeplessness now."	7/2/01	Greatly improved.
8	No headaches, feeling bright and better.	...	Greatly improved.

## FORTY-SIX CASES OF CHRONIC INSOMNIA AND ASSOCIATED

NO. OF CASE.	DATE.	SEX.	AGE ABOUT	COMPLAINT.	CO-EXISTING CONDITIONS (IF ANY).
18	23/6/98	F.	64	A nervous fear ; sleeplessness.	Severe prolapse of uterus.
19	1/7/98	F.	37	Trouble in the head—a feeling of stupidity ; imperfect sleep.	..
20	13/7/98	F.	53	Sleeplessness for 6 weeks ; feels as she would go mad.	...
21	19/8/98	F.	63	Giddiness ; sleeping badly.	Attack of paresis of right side 2 months ago.
22	9/9/98	F.	37	Sleeplessness ; lightness in head and nervousness for a long time.	Astigmatism.
23	12/9/98	M.	40	Cerebral fatigue ; some threatenings of fear of suicide.	Influenza ?
24	8/11/98	F.	40	Sleeplessness ; “fearful dreams” when asleep.	Epilepsy and uterine fibroids.
25	24/11/98	F.	33	Headaches for 8 years ; congested feeling at top of head ; stimulant helps temporarily ; imperfect sleep.	...
26	16/12/98	F.	23	Imperfect sleep ; starting out of bed during night ; very nervous and restless during the day.	...
27	19/12/98	M.	45	Giddiness ; feeling of confusion when adding up figures.	Chronic influenza.
28	11/1/99	F.	39	Sleeplessness ; average amount, 4 hours.	...
29	15/2/99	F.	39	Nervousness, giddiness, and sleeplessness.	...
30	20/2/99	M.	40	Nervousness ; restlessness ; imperfect sleep ; brain easily fatigued.	Neurasthenia.



NEUROSES TREATED BY FARADISATION OF THE HEAD (*continued*).

NO. OF APPLICATIONS.	REMARKS.	DATE.	FINAL RESULT.
5	"The electricity did a great deal of good in steadying the head; would like, if possible, to have another time of it." Sleeping pretty well.	5/5/99	Greatly improved.
2	Feeling well now; sleeping ever so much better.	6/7/98	Absolutely or practically cured.
1	Cause too acute; lives too far away for treatment.	...	No result.
13	Sleeping better than for 5 years.	22/11/98	Absolutely or practically cured.
5	No giddiness; feeling well; sleeping much better; no headache. The dreadful feeling in the head gone, but cannot yet stand much excitement. Glasses not yet obtained. Improvement has lasted since close of treatment. Not troubled again with sleeplessness.	19/9/98 13/2/01	Absolutely or practically cured.
6	Case detailed below.	...	Absolutely or practically cured.
3	...	...	No result.
3	Brain fatigue less; headache a great deal better; sleeping for 8 hours and more soundly.	15/12/98	Greatly improved.
5	The electricity stopped the startings, and caused deeper and longer sleep. Report by mother.	6/2/01	Absolutely or practically cured.
8	No giddiness for some time; quite clear in adding figures. Patient says now (Feb., 1901)—"The electricity did me no harm." His wife says—"In my opinion, it did him good; I observed that he complained less after the treatment."	3/3/99	Slightly improved.
1	Electricity caused dreadful headaches, lasting 2 or 3 days; was giddy, sick, and wretched, and had a shocking bad night after. "Now sleeping very well indeed."	...	Temporarily injured.
5	Case detailed below.	...	Absolutely or practically cured.
4	"The electricity did me neither good nor harm."	13/2/01	No result.

## FORTY-SIX CASES OF CHRONIC INSOMNIA AND ASSOCIATE

NO. OF CASE.	DATE.	SEX.	AGE ABOUT	COMPLAINT.	CO-EXISTING CONDITIONS (IF ANY).
31	8/3/99	F.	49	Insomnia; sleeping only by the use of alcohol; great nervousness.	Influenza.
32	12/6/99	M.	50	Nervousness and confusion of thought; imperfect sleep.	...
33	11/9/99	M.	46	General nervousness.	...
34	19/10/99	F.	37	Nervousness; restlessness; sleeplessness.	Endometritis.
35	12/2/00	F.	21	Sleeplessness; darting pains through head.	Chlorosis.
36	23/5/00	F.	45	Nervous; "head feels thick."	...
37	31/5/00	F.	40	Sleeplessness lasting 5 months.	Mitral disease; pregnancy; confined to bed.
38	2/7/00	F.	30	Sleeplessness and nervousness.	Pregnancy: 8 months.
39	30/7/00	M.	25	Sleeplessness for 3 weeks—about 2 hours per night.	...
40	5/9/00	M.	58	Sleeplessness; nervousness.	"Predominant morbid thoughts"; advised by specialist to have an attendant.
41	7/12/00	F.	29	Insomnia for 3 weeks.	Chronic sickness.
42	11/12/00	M.	48	Insomnia for about 6 months.	Influenza.
43	2/1/01	M.	58	Giddiness; attacks of momentary loss of consciousness.	Middle ear disease.
44	7/1/01	F.	35	Sleeplessness—average, 3 hours nightly.	Multiple neuritis; neurasthenia.
45	8/1/01	M.	31	Nervous since boyhood; creepy feelings in head; sleeplessness; starts out of bed during the night and walks about the room.	Of feeble intellect.
46	14/1/01	F.	65	Sleeplessness for more than a year—average, 4½ hours.	...

NEUROSES TREATED BY FARADISATION OF THE HEAD (*continued*).

NO. OF APPLICATIONS.	REMARKS.	DATE.	FINAL RESULT.
24	Less nervous; sleep improved, but precarious. Has had to travel from Edinburgh for treatment.	31/8/99	Greatly improved.
7	"I was quite cured, although gradually; how much of the cure was attributable to the electricity, I cannot say, but I am satisfied that the applications had a beneficial effect."	6/2/01	Absolutely or practically cured.
3	"Decided comfort" for several days after two applications; pain after third.	4/10/99	Slightly improved.
4	"Slept well since electricity to head."	4/7/00	Absolutely or practically cured.
4	After electricity slept at once on going to bed, and headaches disappeared.	6/2/01	Absolutely or practically cured.
8	Continuing to improve.	5/1/01	Greatly improved.
2	After first application, had a longer sleep than for past 3 months, unless under beer or bromide.	1/6/00	Greatly improved.
4	Sleeping much better.	8/7/00	Greatly improved.
4	Good sleep since treatment.	9/2/01	Absolutely or practically cured.
20	Patient says—"Freer from nervousness generally during last 3 weeks." Friends say no material difference.	7/12/00	Slightly improved.
3	Declined to give further treatment, as patient had twice come for the electricity under the influence of opium.	...	No result.
9	Case detailed below.	21/12/00	Absolutely or practically cured.
3	No return of the symptoms almost at all.	21/1/01	Greatly improved.
8	Case reported below.	...	Absolutely or practically cured.
...	Case detailed below.	...	Greatly improved.
3	Sleeping ever so much better; do not require electricity now. Reported to be still sleeping much better.	18/1/01	Absolutely or practically cured.
		3/2/01	

The next case (No. 12) is interesting in explanation of the frequency of the applications. This gentleman, whom I have known since his boyhood, had been coming to me occasionally for years, usually for two or three visits only at a time, since he tired of visiting me as soon as he became slightly better. I had generally treated him with bromide, antipyrin, nux vomica, arsenic, &c., assuring him there was nothing seriously wrong, and advising him to stop tobacco and alcohol.

I find that in 1890 his complaint was oppression on the top of the head, nervousness, and sleeplessness, with trembling feelings in his hands and feet. These symptoms, he said, were due to worry, but my own impression was that the worry was due to his inability to cope with his ordinary easy work, and that this inability was due to an ill-regulated life in his youth.

When he visited me on 4th February, 1898, I decided to try electricity to the head, as I had been getting good results in similar cases.

By 18th February, when I asked him how he was getting on, he replied, "I am a different man, I can assure you." On 14th March he volunteered the remark, "The electricity is working wonders; I have an excellent mental grip of things now." As this gentleman spent the winter months in town and the summer months in the country, coming into town daily, I advised him at the beginning of April to try how he would get on without the electricity, now that he was to be living in the country.

He returned to me in August, saying that he had felt the electricity so "soothing and strengthening" that he would like if I would allow him to return for more. He continued to return at first once a week, then once a month, till the following March.

In October, 1900, eighteen months later, I saw his wife, and, on enquiring for him, she said, "He is very well, and so much happier; if not, he would certainly be back for more electricity."

The next case I wish to report is No. 23. This was a case of what Althaus calls "encephalasthenia," due, the patient said, to nerve-strain and domestic cares for three years back. He said that existence was a misery to him. When asked as to the extent of the insomnia, he replied that in its present severity it had lasted for three or four months, and that sometimes for two or three days he had never had a moment's sleep. He had been subject to sleeplessness, to a less degree, for ten years. I told him at his first visit that I thought I

could do nothing for him; that he must go off for a long holiday. He said he could not do so, and begged of me to try something. I said, on condition that he did no business for one week, altered his habits, and came to me every two or three days, I would try what electricity to the head might do. Within two weeks his manner indicated such an improvement that I asked him to describe what difference he felt. His reply was, "I think I can best describe my altered condition by saying that I feel that it is good to live now."

At his last visit to me, on 24th October, six weeks from the beginning of the treatment, I told him that I thought it was quite unnecessary now to give him any treatment.

In this case, as in some of the others, I wrote recently enquiring as to some points on which my notes seemed to require supplementing. In this gentleman's reply he says that, in his opinion, the good result was also partly due to the rest, open-air exercise, change of diet, and diminished use of tobacco and alcohol, and that the good effect of the treatment had lasted five or six months, till, indeed, he had again ceased to live a healthy life.

I have noticed that one of the early results of this electric treatment is an increase of self-control, life is made happier, and there is less desire to return to the old habits.

I shall next relate a case showing that it is a mistake to give up the treatment because the patient complains of the bad effect of the current.

Case No. 29. This lady was becoming alarmed about her sleeplessness, which had lasted for eighteen months. At her first visit to me I began faradisation of the head, letting, as usual, all other treatment severely alone. I advised her to return in three or four days for the next application. She failed to do so, and, as I had known her since childhood, I called and enquired why she had not returned. Her answer was—"Oh! no! you have no idea how bad I was after your treatment." I insisted that she should come that afternoon, and bring her husband with her, for more electric treatment, promising to give her a smaller dose this time. She did so, and at the next visit—two days later—she said she was so much better, was "so delighted about the sleeping." She had five applications in all, and has continued till now to sleep, as she puts it, "beautifully."

I am purposely avoiding troubling you with reports of routine cases, desiring that each case reported should emphasise some special point.

The interest of the next case (No. 42) lies in the information



it yielded regarding the importance of avoiding drugs during the electric treatment. This gentleman complained of severe insomnia, which had lasted for six months. He believed that it had arisen from the great heat in London, where he usually spends the summer months, and also from mental worry. He had lately had what seemed to be an attack of influenza.

On account of the influenza, I put him under quinine—9 gr. to 12 gr. daily—and ordered him rest in bed, with cessation from all work. He improved considerably during that week, but at the end of that time, on 11th December last, he told me that the insomnia was just as severe as before, though the causes of the worry and anxiety had passed away, and although bromide and chloral had been tried. On that day I began electric treatment of the head. That night he had “the best sleep for several weeks,” namely, seven hours.

The current was repeated daily. The next night he had a splendid “full” sleep. After four daily administrations I told him not to return for three days. When he next called I was surprised to learn that the sleeplessness had returned, and that he was suffering from a throbbing sensation in the head. On enquiring as to any possible cause, I discovered that he was still taking the quinine in full doses, though the necessity for this drug had passed. The quinine was stopped at once, and on the following night the sleep was “splendid,” in spite of a new cause of worry that had arisen. I stopped treatment four days later, and there has been no sleeplessness since. In this connection I may simply refer here to Case No. 40. My reason for refusing further treatment in that case was that the lady, when I accused her of it, denied that she was taking opium, though she subsequently confessed it.

The interest attached to the next case (No. 44) is due to the fact that the insomnia was associated with neurasthenia. I had come to the conclusion, from the results in Case No. 30—also a case of neurasthenia—in which I had tried electricity to the head before beginning the Weir Mitchell treatment, that in future there was no use employing it in such cases at all. I accordingly put this lady at once under the usual treatment for neurasthenia. The sleeplessness continuing in spite of the Weir Mitchell treatment, and averaging only about an hour and a half each night, induced me to change my mind at the end of four days.

The night following the first application, which was given at 9:30 P.M., she slept for six hours, the longest sleep she had had, she said, for nine months. She continued to sleep well under daily administrations of the current, unless when

disturbed with abdominal pain due to what might be called gastric neuritis. It will be seen from the table that she was suffering from peripheral neuritis. When I promised that she would soon be getting eight hours sleep per night she said she did not think that this was possible, as she had never in all her life had eight hours sleep in one night. It was a mistake to make this promise, for the longest sleep I was able to bring about in one night was seven hours and forty minutes.

This lady, when spoken to about her sleep, was more impressed with its soundness than with its duration, and with the feeling of freshness she had on waking—a feeling to which she had long been unaccustomed.

Evidently faradisation of the head in neurasthenia, though of no use as a substitute for the Weir Mitchell treatment, may be employed to supplement it with advantage.

The last case I shall detain you with is No. 45. This was a gentleman who had been of weak intellect since childhood. His facial expression was typical of the melancholic. The family physician, four years previously, had advised that he should be put into an asylum.

It seemed at first a case in which it was ridiculous to try electricity. I accordingly advised a plunge bath at night at 96° F. for twenty minutes, 30 gr. bromide at bedtime; and, for the melancholia, 5 gr. thyroid extract twice daily. No result whatever following this, I began electricity to the head as an experiment about a week later. Almost at once he began to improve, although he was at first slow to admit this himself. I told his brother that the electric treatment was merely an experiment, and that, with his consent, I would give it a trial for two weeks. At the end of that time I said to his brother that, although I saw that some improvement was following, I did not feel inclined to put myself to the trouble and him to the expense of a continuance of the treatment. He begged of me to continue it, as he had observed that after each application of the current his brother was always "brighter, saner, and clearer eyed," this condition remaining for several hours, and continuing in a less marked degree for a day or two after. His father, he said, had also noticed this. The treatment has been continued since twice a week. The startings out of bed during the night, which had before the treatment occurred once every night, have, his brother informs me, practically ceased entirely for nearly three weeks; and, whereas it used to be difficult to get him out of bed in the morning, on account of the restless nights he had had, he now sleeps soundly and awakes fresh.

Returning to the tabulated statement of these forty-six cases, what deductions is it justifiable to draw from a study of it? I think I am free to state that there is no remedial measure at present known to the profession, other than a prolonged holiday, which will give such immediate and more or less prolonged benefit.

It might be interesting here to state what, in my experience, has been the more immediate, as well as the various later, effects of the treatment, apart from the mere effects on the insomnia. I have gathered these from the statements of patients whilst under the treatment.

The first effect is a benumbing influence on the parts to which the electrodes are applied—the brow and the nape of the neck. Later on, during the *séance*, patients usually volunteer the remark that it is making them sleepy. On the way home there is exhilaration, described by some as like to the effect of champagne: a feeling as if walking on air; an unnatural buoyancy of spirits: a feeling of comfortable lightness in the head. One gentleman remarked, “I felt as if I had got a new head.” This feeling passes off usually in a few hours, and when night comes, if the treatment is having a favourable effect on the insomnia, the patient falls asleep sooner, the sleep is sounder, and there is a feeling of freshness on awaking in the morning. On the following day, and for a longer or shorter time after, according to the progress of the case, there is a quiet, self-possessed feeling; a sensation of being braced up; of having a better mental grip of things, all the sensations, indeed, that ought to be present in a *mens sana in corpore sano*—a condition of merely dragging on a miserable existence having been exchanged for a habitual sense of well-being. The sensation of unnatural exhilaration as a secondary result of the electricity differs thus from that following champagne in that, whereas the former leaves the patient on the following day with a healthier tone of mind and body, the latter, although giving a feeling of being “in heaven,” is apt, in direct proportion to this exhilaration at night, to cause him to feel “in the other place” in the morning.

I have said that I would avoid theorising much, if at all, on the action of electricity on the neuroses we are considering, but I cannot help saying here a few words as to the impression left on my mind on this matter after pretty long and close observation of the effects of this kind of electricity on the brain. The galvanic or continuous current, which I have never employed in these cases, is said to act by producing a

state of electrotonus. That I can understand the meaning of when this current is applied to a muscle or nerve in part of its course. Single induction shocks will also, I understand, do so. In the case of the brain, however, we are dealing with a mass of nerve cells, and it is needless to argue as to what the effect will likely be on the normal electric condition of these cells. It seems to me as if the faradic current acts on the cerebral nerve-cells in a physico-chemical manner. With this current the vibrations of the current interrupter occur about fifty times per second, giving two currents in different directions at each interruption. We have thus in fifteen minutes—the time usually occupied at a sitting—ninety thousand impulses passing through each molecule of the brain substance. These are bound to have a material physico-chemical effect, influencing metabolic processes, and, where productive of good, changing, in a greater or less degree, morbid into normal metabolism. The force of the influence must be capable of gradations from an amount so almost infinitely minute as to leave unaffected the normal vital changes ever going on in the molecules, up to an amount sufficient to interfere seriously with the integrity of the organism. Now, the nerve-cells have, in the cases we are considering, from ill-regulated action, come to lose their capacity for normal restrained action. These electric rhythmic impulses do not make them rest in the sense of producing a sluggish life in them; but give them a period of restful activity, which alone is conducive to organic health, just as the gentle, pleasurable, rhythmic movements of the dance will ease the aching limbs, and as the jaded mind, when removed from the influences of business worry in the city, becomes rejuvenated under the sweet influence of the country; the eye finding a restful and, therefore, pleasurable occupation in beholding a beautiful picture in the ever changing aspect of nature, as the ear does in an environment where the very stillness is music.

After this brief digression regarding the why, I wish to say a few words as to the how.

I have hinted that my methods are different from those generally employed in the ordinary use of the faradic current, but this does not necessitate any material difficulty in the carrying out of the treatment by anyone who is willing to devote the time necessary, though this time element is one of the principal drawbacks to the practice of electrotherapeutics. One of the main differences in my method of applying the treatment is that my secondary coil is composed of many more turns of fine wire than are those generally employed for clinical purposes, and therefore the current from



it is more sedative than irritating. I take special precautions to have the current entirely under control and very much restrained, especially at the beginning, and to have the patient under it as shown on the faradimeter scale before he or she can possibly be aware of it, employing it throughout only in small doses, and judging of the actual amount given by my faradimeter, which indicates when the current is on and what dose the patient is receiving. This exact dose is capable of being maintained with the greatest nicety, though the patients may, during most of the time, be unable to say whether they are receiving any current at all. As to the question of coils, the one I use is a compound one, and was specially made to my instructions. It is composed of about 8,000 to 9,000 turns, the usual faradic apparatus supplied having coils with, perhaps, sometimes only 2,000 or 3,000 turns. This compound coil has certain conveniences, since, by the change of position of a plug, coils of varying intensity, and therefore of varying therapeutic effect, from sedation to stimulation, can be easily tapped. Formerly, I began the treatment with No. 4—the longest—gradually coming down to No. 2 or even No. 1, as the patient became less in need of sedative action: but I soon found that doses which soothed when the electricity was taken from No. 4 coil, caused quite a different effect when taken from No. 2 coil, which has little more than half the number of windings. Indeed, in one case—No. 16—the effect was so serious as to alarm the boy's mother after leaving my house. Since that time I have confined myself, in the treatment of insomnia, wholly to the use of No. 4 coil. That the same amount of current from coils of different intensities produces different effects I have proved by finding that, whilst one milliamper<sup>1</sup> of current from No. 4 coil is easily and comfortably borne, *the same quantity* from No. 3 will be a source of discomfort, and from No. 2 of distress. I have tried as an experiment on myself the effect of faradisation of the head when employing one of the ordinary shop coils, finding that, whilst more than one milliamper<sup>1</sup> of current from my No. 4 coil gave a pleasant sensation, a current even smaller in amount from the other caused such a feeling of distress, general irritability, and anxiety as to compel me either to reduce it or stop it. What the effect would be of a much

<sup>1</sup> By one milliamper<sup>1</sup> faradic current I mean the electro-magnetic equivalent of an amount of sinusoidal alternating current, the galvanometric measurement of whose sinusoidal galvanic equivalent is one milliamper<sup>1</sup>. See article on "Faradimeter" by the author in *Transactions of Glasgow Philosophical Society*, 1897-98.



smaller amount of current from these small coils I have had no time to try; nor did I care to experiment in this direction on my patients, who came to me for relief and not for experimental purposes. I should say, however, from what experience I have, that it is quite possible—if the dose were sufficiently small, cautiously and gently applied, and carefully measured—the result might be good, though it may safely be assumed that my present plan of treatment is likely to give much better results. The dose I have found suitable varies from one-third milliamperere up to 1 milliamperere, or even, in some very few cases, up to  $1\frac{1}{2}$  milliamperere. In order easily to control the current, there should be two rheostats, or current restrainers—one of, say, fifty ohms, easily graded, to control the supply of current to the primary coil; and another, a compound one, with a total of about 10,000 ohms resistance in series with the patient to control the secondary current. The faradimeter is also, of course, in series with the patient. The current to the primary may be obtained from a small accumulator, or from two or three fairly large ordinary cells.

Dr. Rockwell (*Medical and Surgical Electricity*) says that “to apply a mild faradic current to the forehead with the softest sponge and largest possible surface is, for the delicate invalid, often unendurable.” I have found no such difficulty, however—indeed, the very reverse. The electrodes are made of fine copper wire-netting, covered thickly with soft felt. That for the brow is about 15 square inches in size; that for the nape of the neck, about 10 square inches. It is important that these be kept clean, be warm and moist, and be closely and uniformly applied to the parts. This last I do by means of an elastic bandage round the head. The electrode in the brow should be connected with the positive pole; that on the nape of the neck with the negative. All the connections should be securely fixed, since a loose connection may cause, by sudden increase of current, serious alarm to the patient. Everything being in order, the secondary coil with its damping shield is made to slide in part off the primary, the battery plug is inserted, and an amount of current allowed to flow into the primary coil, which has a fixed core, sufficient to give, as indicated to the ear, the greatest frequency of vibrations possible. The secondary coil and the damper are then slowly pushed home, and a rheostat governing the secondary current slowly and gradually moved till an amount of current just susceptible to the patient is reached. The needle of the faradimeter will now show a deflection of fully one-half millimetre, equal to about one-fourth of a milliamperere. The

current is now gradually increased till the maximum is reached—one milliampere or less—according to what the patient can comfortably bear. With new patients I frequently employ less current than they can, at the close of the *séance*, recognise the presence of. At the end of a *séance* of ten to twenty minutes the current is gradually reduced, and, as I said before, the patient is allowed to remain quietly sitting for a few minutes; otherwise alarming, though not dangerous symptoms may follow. When he lives in town or within easy distance, I generally apply the current three times a week for two weeks, or twice a week for three weeks; six applications in ordinary cases proving sufficient. If three applications should fail to effect any improvement, the cause for this must be searched for, and, if possible, removed. Failing the discovery of a cause, or the possibility of its removal, the treatment should be stopped, since no benefit is likely to result from it under the then existing circumstances.

My faradimeter, in its present form, is twice as sensitive as the one shown at the meeting of the Glasgow Philosophical Society, whilst it is less than one-fifth of the size.

## II.—DEMONSTRATION OF THE RESULTS OF RECENT EXPERIMENTS TO DETERMINE THE INFLUENCE OF THE EYEBALL ON THE GROWTH OF THE ORBIT.

BY DR. ERNEST THOMSON.

Dr. Ernest Thomson gave a demonstration of skulls (rabbits) from which one eye had been removed about the twentieth day with the object of determining whether removal of an eye in early life does or does not lead to failure of growth of the bones and soft parts of the orbit. The skulls showed that very marked deformity results, the anophthalmic orbit being smaller than its fellow in all directions.

The research has already formed the subject of a communication to the Ophthalmological Society of the United Kingdom, and the results will be found in full detail in the next volume of that Society's *Transactions*.

## III.—TONSILLAR CALCULI OCCURRING IN BOTH TONSILS.

BY DR. ALBERT A. GRAY.

The following case of calculus in the tonsil is of interest chiefly by reason of the fact that both tonsils were affected by these curious concretions:—

A gentleman, æt. 68, by profession an architect, consulted me on 3rd January, 1900, complaining of a sore throat of two months' duration. The pain was not very severe, but its constant presence, and the fact that ordinary treatment had brought about no amelioration, made him anxious to ascertain the cause of it. This pain was more pronounced on the left side, but was felt to a certain extent over the whole pharynx.

The patient was of a distinctly gouty constitution, as evidenced by several chalk-stones which were present in the phalangeal joints of the fingers, and by the presence of iritis in both eyes, which an oculist had informed him was due to his gout.

On examination, the pharynx appeared somewhat reddened. The left tonsil was distinctly larger and redder than its fellow on the opposite side, and felt firm to the touch. The condition might, indeed, have been mistaken for malignant disease—and, indeed, the fear of this had been weighing on the patient's mind.

On probing the tonsil carefully, however, the instrument was felt to come in contact with a hard, rough, movable object in the upper part of the gland, and it was clear that the case was one either of necrosis of bone or of calculus of the tonsil. The fact that there was no discharge of pus or other evidence of bone mischief, and further, as the probe had been passed into a tonsillar crypt before coming in contact with the object, the inference was that a calculus was present.

On attempting to remove the calculus, or even to probe it gently, the patient felt considerable pain. A few particles, however, came away, sufficing to show conclusively the nature of the body.

The patient desired chloroform for the removal of the stone, which he wished to have done the following day. That evening, however, when he was sitting in front of the fire, he felt a hard substance in his mouth, and spat it out in the grate, where it was lost. After this his symptoms disappeared, and he left town for a holiday.

I heard no more of the patient until 22nd June, 1900, when I received a letter from him in which he wrote to say that he had been troubled a good deal with his throat since March, but it never occurred to him that it might be due to another stone until two days before he wrote—that is, on 20th June. On that day he felt a slight grating sensation in the throat, similar to that which he had experienced when I saw him last time, but on the other side. On the 22nd June he wrote saying, "As I lay awake this morning, sure enough another

stone came into my mouth, but I did not rashly spit it out as I did the last one, but laid it aside, washed it, and now send it to you. It is hardly so large as the last one, but I am very glad to get rid of it, and I trust no more will follow."

Since writing, the patient has not been troubled in respect to his throat.

The origin of tonsillar calculi, or tonsillitis, as they are sometimes called, is a matter of dispute. Bosworth<sup>1</sup> considers that a foreign body obtaining entrance to the crypts is the cause of their occurrence. But the case just described would rather negative that view, since it is highly improbable that foreign bodies would become embedded in both tonsils within so short a period and without the patient's knowledge.

Gruening<sup>2</sup> states that they are brought about by the presence of the *leptothrix buccalis*, and that chemically and microscopically they are of the same nature as the concretions which sometimes gather round carious teeth. Lennox Browne supports this view. Of historical interest is the view of Schenk,<sup>3</sup> who, in the year 1609, described them as being of gouty origin. The patient whose case has just been related was certainly of a pronounced gouty constitution.

Aitchison-Robertson<sup>4</sup> says that tonsillar calculi occur in persons who have suffered from repeated attacks of tonsillitis, and, though this is true in the general sense, it does not apply to the case described above. The same writer is of opinion that the larger calculi are formed by the retention of pus in the interior of the tonsil, the abscess having never discharged completely "the residual matter has undergone caseation and subsequent calcification."

Robin<sup>5</sup> considers that the stones may take their origin in small calcareous crystals, which may be seen in the centre of the tonsil.

As regards size, these concretions vary exceedingly. The largest on record is that described by Robertson.<sup>6</sup> It was the size of a small hen's egg, and weighed 26·8 grammes, or nearly 1 oz.; while Lange<sup>7</sup> removed two calculi from one tonsil, one of them weighing 24 grammes and the other 4 grammes. The most weigh about 3 or 4 grains. That obtained from the

<sup>1</sup> Bosworth, *Diseases of the Nose and Throat*, 1892, vol. ii, p. 180.

<sup>2</sup> Gruening, *Arch. f. Laryngol.*, vol. iii, p. 136.

<sup>3</sup> Schenk, *Obs. Med. Rar.*, p. 227, Frankfort, 1609.

<sup>4</sup> Aitchison-Robertson, *British Medical Journal*, 7th January, 1899.

<sup>5</sup> Robin, *Fraité des Humeurs*, 1874, p. 551.

<sup>6</sup> Aitchison-Robertson, *loc. cit.*

<sup>7</sup> Lange, *Deutsche Zeitschr. f. Chirurgie*, Bd. 39, Hft. 1 and 2.



patient whose case is described above weighs 4 grains. They are usually more or less nodulated, and give off a disagreeable odour. In colour they are pale brown.

The chemical constitution of these peculiar formations has been investigated by Langier. He states the composition to be as follows:—

Phosphate of lime,	. . . . .	50.0 per cent.
Carbonate of lime,	. . . . .	12.5    "
Mucus,	. . . . .	12.5    "
Water,	. . . . .	25.0    "

The gigantic calculus described by Aitchison-Robertson, and referred to above, was shown on analysis to have the following constitution:—

Organic matter, . . . . .	18.40 per cent.
Inorganic matter, . . . . .	81.60    "
Phosphoric anhydride, . . . . .	50.00    "
Calcium and magnesium oxides, . . . . .	28.20    "

From these two analyses, therefore, it must be assumed that the chemical constitution varies considerably. It should be added that the *leptothrix buccalis* is generally found in association with the calculus.

As regards diagnosis, this may be easy or difficult. In those cases in which a portion of the stone appears above the surface of the mucous membrane, there is, of course, no difficulty. The stone, however, as in the present instance, may be deeply embedded in the tonsil, and give no evidence of its presence beyond the symptoms. In these cases, each crypt should be carefully probed; thus, in the case reported above, the stone was only felt after three or four crypts had been examined.

Tonsillar calculi are said to be uncommon. It must be remembered, however, that they frequently give rise to no symptoms. Furthermore, there is no doubt that, for the reason above given, they often escape recognition. Their occurrence, therefore, may not be so rare as has been supposed.

An interesting paper on the subject, and one to which the present writer is much indebted, is that by Aitchison-Robertson, which appeared in the *British Medical Journal* for 7th January, 1899.



MEETING XII.—1ST MARCH, 1901.

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*The Vice-President, DR. W. G. DUN, in the Chair.*

I.—LARGE POLYPUS OCCUPYING THE NASO-PHARYNX.

BY DR. WALKER DOWNIE.

Dr. Downie showed a boy, 14 years of age, who was admitted to the Western Infirmary (Ward XXV) on 21st February, 1901. He had complete obstruction of the right naris for many months, and, latterly, the left naris had been similarly affected. This obstructive difficulty was accompanied by frequent tickling cough, shortness of breath on slight exertion, disturbed sleep, during which he snored loudly, and frequent waking up with a sense of suffocation.

There were mucous polypi in the right naris. The naso-pharynx was very completely occupied by a large bluish-grey growth, the lower portion of which, rounded and smooth on the surface, projected below the level of the free border of the soft palate for fully half an inch during quiet respiration. During deep inspiration a much larger portion of the growth was exposed to view. The movements of the tumour were restricted by the completeness with which it filled the naso-pharynx. The opinion was expressed that it was a mucofibrous polypus, and that it sprang from the right side of the vault of the naso-pharynx, and possibly from the near neighbourhood of the posterior nares.

II.—THREE SUCCESSFUL CASES OF COLECTOMY FOR CARCINOMA OF THE COLON.

BY MR. A. E. MAYLARD.

CASE I.—Mrs. S., æt. 52, was admitted into the Victoria Infirmary on 28th April, 1900, suffering from chronic intestinal obstruction. On examination, the patient was found to be very emaciated, and to have been losing flesh for some months. She suffered from constipation, and was vomiting. The abdomen was relaxed, but every few minutes intestinal peristalsis was observed. This peristalsis was accompanied with

pain, and with audible sounds of gurgling. A hard nodule could be felt in the left hypochondrium, which appeared freely movable.

On 1st May the first stage of colectomy was performed. The abdomen was opened, and a loop of ascending colon containing the stricture was fixed outside the abdomen. Paul's tube was inserted above the stricture.

On 11th May the exventrated loop was excised, and the skin clamped with Nélaton's enterotome.

In order to close the artificial anus, it was found necessary to subsequently short-circuit by dividing the ileum near the cæcum, closing the distal extremity, and planting the proximal into the transverse colon. The artificial anus was then easily closed, and patient made an uninterrupted recovery.

When last seen (1st March, 1901) she was in excellent health, having put on 25 lb.

CASE II.—Mrs. H., æt. 68, was admitted into the Victoria Infirmary on 5th December, 1900, suffering from symptoms of chronic intestinal obstruction. On admission she was found to be suffering from chronic constipation, with no passage of either fæces or flatus for a week. She was very emaciated, and had great distension of the abdomen. Peristaltic movements were distinctly visible, with accompanying sounds of gurgling. Relief was afforded by a right inguinal colostomy.

On 18th December the first stage of colectomy was performed, a loop of the descending colon, embracing the malignant stricture, being drawn through the wound on the left side. Two days later the loop was excised, and Nélaton's enterotome introduced.

On 23rd January, 1901, the artificial anus was closed.

She left the infirmary on 7th February perfectly well, and when last heard of (28th February) she had put on 9½ lb.

CASE III.—William M., æt 47, was admitted into the Victoria Infirmary on 21st September, 1900, suffering from symptoms of chronic intestinal obstruction. His history was that for some time previously he had had at variable intervals temporary attacks of obstruction, accompanied by vomiting and abdominal pain. He had lost flesh, and was conscious of failing strength. On admission he was suffering from one of these attacks of obstruction.

As there was some uncertainty as to the situation of the obstruction, a presenting distended loop of gut was opened

through an incision in the right iliac region, and relief afforded by the insertion and fixation of a glass drainage-tube. While under the anæsthetic, a tumour could be felt above and to the left of the umbilicus.

On 3rd October the first stage of colectomy was performed. A loop of the transverse colon containing the tumour was with difficulty withdrawn and fixed.

On 10th October the exventrated bowel was excised. Although fæces came freely from the colon, there was still troublesome leakage and irritation of the skin about the enterostomy wound. To close this latter, it was found necessary to excise about 2 inches of the small gut embracing the fistula. The wound healed well, and patient left the hospital with an artificial anus, and greatly improved in health.

When last seen (1st March, 1901) he was in good health, and had put on considerable weight, and now waits the completion of the operation.

Mr. Maylard, in commenting on these cases, said that they were the last three he had operated on for carcinoma coli, and that he was convinced that the safest method of performing colectomy was by separate stages. If primary colectomy—that is to say, excision of the tumour and re-establishment of the continuity of the canal—was ever justifiable, it was only in those favourable cases where there were, and had been, no symptoms of obstruction, and where, therefore, there was no disparity in calibre between the bowel, proximal and distal to the seat of disease. He preferred to use Nélaton's enterotome for the removal of the spur, and believed it possible to materially shorten the whole period over which the operation extends by inserting the enterotome when the loop is exventrated.

In cases where it was not found possible, or deemed inadvisable, to exventrate the loop with its diseased portion, short-circuiting, after the method accomplished in Case I, should be executed; that is to say, the ileum should be divided near the cæcum, the distal end closed, and the proximal end planted laterally into a part of the colon beyond the seat of disease. This method of short-circuiting does away with all the inconvenience of an artificial anus. It not only serves to prevent the possibility of any future obstructive symptoms, but spares the patient for the rest of life from all those annoying and trying conditions associated with involuntary evacuations from the abdominal parietes.

### III.—DIGESTION LEUCOCYTOSIS IN CANCER OF THE STOMACH.

BY DR. CARSTAIRS DOUGLAS.

Dr. Douglas read a paper on digestion leucocytosis in cancer of the stomach. He first described the leucocytosis of digestion in health, pointing out that it was a practically constant phenomenon, and depended for its intensity on the age of the person and the nature of the food, being most marked in infancy and after a meal rich in proteids. In disease of the stomach, it might be absent or feeble. Müller first pointed out, in 1890, that it was frequently absent in cancer of the stomach; and some years later, Schneyer, Hartung, and others applied this point clinically to the differential diagnosis of cancer, benign stenosis, and ulcer, stating that leucocytosis was almost always absent in cancer as compared with the other diseases. Dr. Douglas, finding that practically no observations on this matter had been published in this country, investigated it in 11 cases of cancer of the stomach, and found that digestion leucocytosis was absent in 6 (54·54 per cent), present in 4 (36·36 per cent), and inconstant in 1 (9 per cent). His figures agree exactly with those of Osler and Macrae, who examined 22 patients for this, and found the phenomenon absent in 12 (54·5 per cent). It appears, therefore, that reliance cannot be placed on this method for diagnosing cancer from other morbid conditions of the stomach.

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### MEETING XIII.—15TH MARCH, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

#### I.—WOUND OF THE EXTERNAL ILIAC ARTERY.

BY MR. J. H. PRINGLE.

Mr. Pringle showed a man, æt. 45, who had been admitted to the Glasgow Royal Infirmary on 13th January, 1901, said to have been stabbed. A small wound was found above Poupart's ligament of the left side, and there was a considerable swelling in the iliac fossa, probably a hæmatoma.

It was considered probable that the iliac vessels had been wounded, and, on exposing them, a wound was found in the external iliac artery, which was sutured with catgut. The patient made an uninterrupted recovery, and now presents no signs of any dilatation of the arterial coats or of hernia. The two posterior tibial pulses are equal in volume and force. There is no atrophy of the limb or sense of weakness.

## II.—ACUTE INFECTIVE OSTEOMYELITIS OF THE RIGHT TIBIA.

BY MR. J. H. PRINGLE.

Mr. Pringle showed also a boy who had been admitted to the Glasgow Royal Infirmary on 31st October, 1898, delirious and with signs of acute infective osteomyelitis of the right tibia. The leg was incised the same evening, and pus evacuated. Later, the whole diaphysis of the tibia was removed; but, in spite of this, pyæmia supervened. After a prolonged illness, during which many abscesses formed and were opened in various parts of the body, the patient recovered. He was shown to the Society chiefly on the account of the fact that a new tibia had developed.

## III.—CASE OF RUPTURED GASTRIC ULCER.

BY DR. W. K. HUNTER AND DR. G. H. EDINGTON.

Dr. Hunter said—In bringing this case before the Society, we do so, not because we consider ruptured gastric ulcer a specially rare condition—unfortunately it is not—but because its early diagnosis is sometimes attended with great difficulty. And as this case was to us such an one, we have ventured to report it at the meeting to-night.

The patient was an inmate of the Glasgow Training Home for Nurses, and I saw her for the first time on 14th February, about four o'clock in the afternoon. The story she told was that at half-past nine that morning she felt a very severe pain in the abdomen, at a point to the left of and a little below the umbilicus. There was also some severe pain in the left shoulder and in the epigastrium, but the epigastric pain seems to have been rather indefinite and uncertain. No cause could be given to explain the sudden onset of the pain, and it had no relation to food.

On inquiry, it was found that for some weeks past the



patient had suffered from dyspepsia, there being lack of appetite and pyrosis; but there was no history of pain after food, and there had been no vomiting. Two days before she had felt sick, but did not vomit, and the sickness was supposed to be due to vaccination.

When I saw her the pain in the abdomen was certainly very severe at a point near the umbilicus, as above mentioned. But there was scarcely any tenderness to touch at this point, and the rest of the abdomen could all be palpated without evident discomfort, though the abdominal muscles were kept fairly tense. The pain in the left shoulder was also severe, and was complained of just about as much as the pain in the abdomen. The patient lay on her back in bed, and she would not move, either to lie on her side or to sit up. There was no distension of the abdomen, and though the liver area could not be mapped out by percussion, its limits being rather uncertain yet it was not replaced by a clear tympanitic note.

The temperature at this time was  $98.4^{\circ}$ , and the pulse 84, and of good quality; and, indeed, except for the very severe pain, the patient seemed quite well. I ordered a quarter of a grain of morphia by the mouth, and as the pain still continued, this was repeated at 10 P.M. I was called again at 3 A.M. the next morning, when the pain was found to be as severe as ever, and especially so in the left shoulder. The temperature was now  $99.6^{\circ}$ , and the pulse 100, of good quality, and not the least like the pulse of peritonitis. There was no abdominal distension or marked tenderness, but the liver dulness was now practically gone. I ordered more morphia, and that no food of any kind should be given by the mouth.

At 9 A.M. the condition was much the same, the pulse being, if anything, rather softer than during the night, and the temperature  $100.2^{\circ}$ . The abdomen was slightly distended, and there was no doubt about the absence of liver dulness. Being now thoroughly impressed with the urgency of the condition, I communicated at once with Dr. Edington, the visiting surgeon to the Home, asking him to advise as regards the need of surgical interference. Dr. Edington saw the patient along with Sir Hector Cameron about an hour later, but they both agreed that the symptoms were not sufficiently clear to justify an operation. Later on in the day, however, unmistakable signs of peritonitis showed themselves, and it was decided that abdominal section was the only chance of recovery. I am sorry Dr. Edington is not here to give you his account of this part of the report, but he has sent me what he has to say on the subject, and I shall now read this to you:—

"*Operation*, 15th February, 1901.—An incision about 4 inches in length was made in the linea alba, between the umbilicus and the ensiform cartilage. When the peritoneum was opened, much gas, with a disagreeable odour, whistled out. There was considerable thickening and injection of the parietal peritoneum in the upper region of the abdomen, and the peritoneal cavity contained fluid and portions of curdled material. The stomach was drawn down, and on its anterior surface, close to the left costal margin, was a recent exudate of fibrin. This exudate measured some inches square, and surrounded a round opening in the walls of the stomach; a similar exudation was present on the corresponding part of the parietal peritoneum.

"The opening in the stomach wall was clean cut, and had a diameter of slightly over a quarter of an inch. It was easily brought down to the wound, and was situated midway between the greater and lesser curvatures, and somewhat towards the cardiac extremity. From it curdled milk and fluid were expelled by the movements of respiration. Surrounding the opening was a thickened ring, evidently an old adhesion; beyond this the stomach wall was healthy. Sponges were packed around the neighbourhood of the rupture. A row of Lembert's sutures were passed in the vertical direction through the healthy wall, so that when tied an infolding of about 2 inches in length was formed in the long axis of the organ.

"A sponge was passed down to the hypogastric region, but it was drawn up again dry, and as it was not considered advisable to prolong the operation further, the abdominal wound was closed in layers. The operation lasted about fifty minutes, and at its close the patient's pulse had improved.

"She spent a fairly comfortable night, but suffered a good deal from flatulence. Feeding was entirely rectal. At 4 P.M. on the following day she had a saline transfusion of 1 pint into the submammary region. Her pulse was slightly, if at all, bettered by this, nor was her thirst relieved. Later on she began to vomit small quantities of coffee-ground-like material, and, in spite of treatment, this continued.

"On the following day the abdominal wound was dressed. A stitch was removed from the skin, and some watery fluid escaped with a disagreeable odour. The liver dulness was still obscured, and she gradually sank. Death at twelve midnight on 17th February, forty-eight hours after the operation.

"I have to express my thanks to Dr. Rutherford for his friendly assistance at the operation."

This is the third case of ruptured gastric ulcer that has come under my care, and now, even more than before, I am impressed with the difficulty of early diagnosis in such cases. In the first case (reported at a meeting of the Society in December, 1898) the diagnosis was comparatively easy; but what was not thought of, even at the operation, was a second ulcer, on the posterior wall of the stomach, which was revealed in the *post-mortem* three weeks later.

The second case occurred last September, when I was on duty in Dr. Steven's ward in the Royal Infirmary. There was a history of pain in epigastrium after food, with occasional vomiting, extending over a period of three years. After dinner the patient felt sick, and lay down in bed. An hour later vomiting came on, and was accompanied with very severe pain in the epigastrium. There was pain in both shoulders, especially the right, and between the shoulders. Vomiting continued for twelve hours, by which time the patient seems to have been pretty well under the influence of opium. This all took place on the 4th inst., and the patient was admitted to hospital two days later as a case of peritonitis.

On admission, the temperature was 102°, pulse 108, respirations 44, and there were no symptoms such as to demand the use of opiates, and, indeed, the case was taken to be one of simple peritonitis. I saw her for the first time the next morning, the fourth day of illness, and there was then nothing special in the patient's appearance to suggest any grave abdominal disorder. The temperature registered 99.2°, pulse 120 and regular, but rather small and wiry. The tongue was dry and coated. There was no distension of the abdomen, and no great degree of tenderness on palpation, except in the epigastric region, where tenderness was very marked. No complaint was made of the weight of the bedclothes, and the knees were not kept drawn up. There was a tympanitic note all over the abdomen, and it extended over the hepatic area, merging at the level of the sixth rib into the thoracic percussion note.

At the operation, a few hours later, a small ulcer was found in the anterior wall of the stomach. It was surrounded by masses of lymph, which seemed of much longer duration than the recent symptoms would have pointed to. The peritonitis was limited to an area in front of, and extending a little below, the normal gastric area. The patient died within forty-eight hours of the operation.

## IV.—CONCLUSION OF THE CASE OF SARCOMA OF THE INFRA-SPINATUS MUSCLE SHOWN IN A FORMER SESSION.

BY DR. G. H. EDINGTON.

At a meeting of this Society on 7th May, 1897,<sup>1</sup> I showed a female patient, aged 8 years, on whom I had performed excision of the left scapula for a sarcoma involving the infraspinatus muscle five months previously. The girl had good use of the limb, except in so far as movements of the shoulder-joint were concerned.

The tumour was examined by Dr. L. R. Sutherland, and, while composed for the most part of spindle-cells, it presented also some round cells and multinucleated masses of protoplasm.

In the further course of the case obscure pains and weakness in the back were complained of; these proved to be temporary, examination was negative in result, and as she was of a neurotic habit, the question of recurrence was dismissed.

She remained well till December, 1897, when she suffered from cough; examination of the chest showed no evidence of disease. In April, 1898, she still had cough, accompanied by expectoration, and she complained of pain in the left side of the chest and in the occipital region. On auscultation, the respiratory murmur was found to be coarse at both bases. There was also dulness over the left base posteriorly, and about half-way down in the axillary line the respiratory murmur had a "cog-wheel" character.

From 14th to 18th May she had hæmoptysis; she also complained of "cramps" in the abdomen; and on 21st some distension was observed. On movement, she kept the spinal column rigid. On 27th, effusion in left pleural sac was noted, the superficial veins of left side of the chest were distended, and respiration was gasping. Death occurred on the following day (28th May, 1898), just seventeen months after the operation.

A *post-mortem* examination was made by Dr. Sutherland and myself. The following is a summary of the condition found:—

Great emaciation; abdomen prominent and tense, containing about 2½ gallons of dark red fluid, with flakes of fibrin and small masses of tumour-tissue.

<sup>1</sup> *Transactions*, vol. i, p. 339.



*Heart.*—Tumour-nodules are present in right ventricular wall and in septum ventriculorum, bulging into right and left ventricles respectively.

*Left pleural cavity* contains about a pint of turbid, blood-stained fluid in lower and back part. *Lung* adherent in lower lobe to chest wall by thick masses of tough fibrin; this lobe is collapsed, and beset by numerous nodules of tumour-tissue. The upper lobe is transformed into a bulky, solid mass, and there is also a glandular mass above the main bronchus. The tumour-tissue shows evidence of necrosis.

*Right pleural cavity* contains no fluid. *Lung* is adherent by fibrous tissue at anterior extremity of middle lobe. A few small tumour-nodules are found superficially and in the substance of the organ. Otherwise the lung-tissue is crepitant, and slightly œdematous in lower lobe. One bronchial gland is pigmented, and shows calcification.

Occupying the fifth intercostal space on right side, near the costo-chondral articulation, is a tumour, about the size of a walnut, which bulges the costal pleura.

*Abdomen.*—Marked sarcomatous involvement of the omentum, which formed bulky, vascular, stringy masses. Intestinal coils were adherent to each other, and to under surface of liver on right side. The abdominal glands generally were enlarged.

*Spleen* free from tumour.

*Left kidney.*—On anterior aspect, near the hilum, is a nodule as large as an almond. *Adrenal* shows a number of tumours intimately connected with large glandular masses at hilum.

*Right kidney.*—Surmounted by a large, soft, semi-fluctuant tumour-mass adherent to under surface of right lobe of liver.

*Pancreas.*—Formed a soft, bulky tumour-mass, involving mainly the body and tail, and in which pancreatic tissue was still recognisable.

*Stomach.*—Numerous small nodules on serous surface, as also on the *intestines*. Mucous membrane free.

*Liver.*—Adherent to diaphragm and to right adrenal mass by tumour-tissue. Tumours are present both in substance and on its surface.

*Diaphragm.*—Shows nodules on under surface, and also a general infiltration of the surface.

Considerable quantity of tumour-tissue in pouch of Douglas, and a mass is found in right *ovary*.

*Vertebral column.*—From anterior surface of body of last lumbar vertebra and of sacral vertebræ masses project, all to left of middle line.



Microscopical sections have been prepared by Dr. M. L. Taylor, who will now describe their characters:—

“Sections for microscopical examination have been prepared from the following secondary tumours, viz., those in the heart wall, suprarenal body, retro-peritoneal gland, ovary, intestine, lung, and intercostal muscle.

“Professor Sutherland’s description of the microscopical appearances of the primary growth would apply very well, with a few alterations, to the secondary growths. The tumour in the infraspinus muscle was a mixed-celled sarcoma, in which spindle-cells predominated, and the secondary tumours are also found to be mixed-celled sarcomata, though considerable variety in the predominating elements exists. In the nodule in the heart wall spindle-cells are present in very large numbers, and they show great variety in their sizes, some being extremely large, while others, again, are comparatively small. The very large ones are probably altered muscle fibres, as in some of them a faint transverse striation can still be seen. Multinucleated giant-cells are also present, though not in large numbers. The appearance of the growth in the suprarenal body is striking, as contrasted with that in the heart. Here the giant-cells largely predominate; in some parts no other form of cell is to be seen, and where spindle-cells occur they are only in isolated strands. Some of these giant-cells have no nuclei, and appear to be simply masses of protoplasm. They are mentioned by Professor Sutherland as occurring in the peripheral portions of the original growth. Necrosis has occurred in places throughout this suprarenal tumour.

“In the growths in the retro-peritoneal gland, ovary, and intestine the spindle-cells predominate, very few round-cells being seen; whereas, in the tumours in the lung and intercostal muscle round-cells and spindle-cells are present in almost equal numbers. The fact that so many variations have occurred in the microscopical appearances of the secondary tumours, as compared with the primary one, is quite in accordance with the growth of some sarcomas. Here the original growth was mixed-celled, with spindle-cells predominating, and in the secondary tumours all gradations are seen from a nearly pure spindle-celled growth to an almost pure round-celled one.”

*Note by Dr. Edington.*—The clinical facts lead me to consider that we have had in this case a primary tumour in

the scapular region, with metastatic infection of the viscera. If the adrenals had been the primary source of the disease, it is, I think, unlikely that there would have been for so long no sign on physical examination of the abdomen,

The primary tumour corresponds both in situation and microscopical characters with what Senn<sup>1</sup> describes as "fascial sarcoma." In such, both round and spindle-cells "may occur in the same tumour. In some of the soft tumours the round cells are unusually large and multinuclear. . . . Fascial sarcoma in children is an exceedingly malignant tumour."

#### V.—NOTES ON THE CONCLUSION OF A CASE OF TUBERCULOSIS OF THE WRIST-JOINT.

BY DR. G. H. EDINGTON.

On 6th May, 1898,<sup>2</sup> I showed to the Society a man, aged 43, in whom I had excised the wrist for tuberculosis. The operation was performed on 11th September, 1897, and six months later he was able to resume his occupation, which was that of a potter. For a period of fifteen months previous to the operation he had been unable to work. Although he suffered from a slight cough, there was no sign of tuberculosis in the lungs, and the prognosis was considered favourable.

He continued to report himself from time to time. The cough persisted, but at no time could I discover evidence of pulmonary tuberculosis. He remained at his work from March, 1897, till 4th October, 1899. On the 5th he had a severe hæmoptysis—a "gush of blood." He became unconscious, but rallied. On the 6th, however, the hæmoptysis recurred, and "choked" him.

That the case should have terminated with pulmonary manifestations is not surprising. Watson Cheyne<sup>3</sup> mentions diseases of the wrist-joint as especially apt to be accompanied by phthisis. It was in view of this that I made repeated examinations of the chest, but the sudden termination was unexpected, in face of the negative results of these examinations.

<sup>1</sup> *Pathological and Surgical Treatment of Tumours*, second edition, 1900, p. 578, 579.

<sup>2</sup> *Transactions*, vol. ii, p. 178.

<sup>3</sup> *Tuberculous Disease of Bones and Joints*, Edinburgh, 1895, p. 316.

## VI.—LARGE FIBROUS POLYPUS OCCUPYING THE NASO-PHARYNX.

BY DR. WALKER DOWNIE.

At last meeting Dr. Downie showed a boy, 14 years of age, whose naso-pharynx was filled by a large firm growth, which blocked both posterior nares.

On the following morning the boy was placed under chloroform, and the growth removed by means of a cold wire snare introduced through the mouth. Its removal, though carried out slowly, and by torsion rather than by cutting, was followed by very profuse hæmorrhage, which was checked by pressure exerted by long strips of lint packed firmly into the naso-pharynx through the mouth and through both nares.

The growth, which was an unusually large one, was, on microscopic section, found to be a very dense fibrous tumour.

## MEETING XIV.—5TH APRIL, 1901.

*The President, MR. H. E. CLARK, in the Chair.*

## I.—CASE OF IRREGULAR MOVEMENTS OF THE RIGHT HAND AND LEG IN A PATIENT OF MIDDLE AGE, APPARENTLY REFERABLE TO SLIGHT HEMIPLEGIA.

BY DR. T. K. MONRO AND DR. A. GALBRAITH FAULDS.

Mrs. M., æt. 46, housewife, was admitted to the Glasgow Royal Infirmary on 20th February, 1901, complaining of loss of memory, headache, irregular movements of the limbs, and general weakness.

The patient stated that the various symptoms commenced at the same time, about two years before admission. The irregular involuntary movements involved the right hand and leg. The headache was confined to a small area on the left side of the vertex, and was not so severe as to interfere with sleep. Memory became defective, but at some times the defect was much more troublesome than at others. In the experience of Dr. Faulds, who saw her before admission, it was sometimes quite clear, and at other times quite a blank. When memory was most defective, speech would be lost, the

loss setting in suddenly, and passing off again, perhaps, in a few days. The difficulty was not in articulation, but in thinking of the words to use. Patient believed that she first noticed her illness on rising one morning, and that the headache, disorder of movement, and weakness were all present at the first. Sensation was not affected, but from the commencement of her illness she had been unable to sew. She attributed her illness to the work and anxiety involved in nursing her husband, who had a broken leg. No relative had suffered from a similar ailment. The family history was good, and there was nothing of obvious importance in her past history, unless, perhaps, the fact that she had had five miscarriages, but these did not follow one another in succession, and there was no other evidence of syphilitic infection.

*Condition of the limbs on admission.*—There is involuntary movement of the right hand, but specially of the thumb, forefinger, and little finger. When the patient is sitting up in bed, the right shoulder is elevated with each respiration much more than the left: but when she is lying upon her back, no abnormal movement is detected in this limb. In the wrist and more distal joints, when the hand is at rest, with the four inner digits flexed, almost the only movement to be seen is in the thumb. Spontaneous movement in this part is chiefly apparent under the influence of its long muscles. The extensor secundi internodii pollicis is in frequent action, and, less frequently, the long flexor. Thus, occasionally the distal joint is flexed for an instant, but more frequently the movement is due to increased and diminished contraction of the extensor secundi internodii pollicis influencing the extended thumb. Occasionally there is adduction for an instant.

When the hand is placed passively in the prone position, with the thumb flexed into the palm, and the other digits flexed over it, the spontaneous movement ceases nearly, but not altogether, the movement that continues having the effect of elevating a little the three inner extensor tendons on the dorsum of the hand. When the hand is laid down prone, the inner digits may remain quiet for a time, but there is a tendency for the little finger to continue in an attitude of over-extension and abduction, but the abduction is diminished from time to time for an instant. Meanwhile, the middle three digits remain still.

When the hand is held up passively, the fingers tend to assume the interosseal position. The movements of the little finger are increased, and include not only abduction and adduction, but also flexion and extension at the metacarpop-



phalangeal joint, and the middle three fingers tend to become slightly involved in the abnormal movements—chiefly flexion and extension at the metacarpo-phalangeal joints. It is probable that the small muscles, at least of the little finger, take part in the disorder.

The movements are quite irregular in time as well as in extent, and on different trials may be found to be at the rate of 24 to 48 per minute. Half a dozen movements may take place in rapid succession, and then there may be a pause for a few seconds. Many of the movements are rapid, but some are slow. When she is gripping tightly with the left hand, so that her attention is taken away from the right, then the right thumb is strongly extended and abducted, and the remaining digits are flexed at the metacarpo-phalangeal and inter-phalangeal joints, and extended at the distal inter-phalangeal joints. The same circumstances bring about an increase in the flexion and extension movements of the thumb, and may also induce well-marked similar movements in the index finger.

In the lower limb the movements are also quite irregular, but they are more unceasing than in the upper limb, and involve coarser muscles. Those that are more conspicuously implicated are the quadriceps extensor femoris, the external rotators of the thigh, and the muscles that act on the tendo Achillis. The flexors of the knee and the abductors of the thigh seem to be little, if at all, affected. The flexors of the ankle are affected distinctly, but not severely. The muscles that act upon the toes are very little affected. The movements of the quadriceps influence the position of the patella, but not of the whole limb. The calf muscles move the foot at the ankle, and the outward rotators tend to induce an attitude of eversion of the limb, which is maintained, with patient lying on her back, by the weight of the foot. The glutei are slightly involved.

Other facts noted after admission are as follows:—The girth of the right limbs is very slightly less than that of the left. There is no important change in the electrical reactions. The knee-jerks are exaggerated. A single passive extension of the tendo Achillis may give rise to several contractions of the calf muscles. The plantar reflex on both sides takes the form of extension of the great toe. Walking is slow, but not hemiplegic. The dynamometer shows in the right hand two kilos, and in the left fifteen (patient is naturally right-handed). The different forms of sensation, including the stereognostic sense, are unimpaired, and the left limbs and trunk muscles are



not involved in the disordered movement. The sense of smell is quite absent on the left side. Visual acuteness—right eye,  $\frac{5}{30}$ ; left,  $\frac{5}{20}$ . There is great contraction of both visual fields, but no hemianopsia. Slight nystagmiform movements on movement of the eyeballs. Relative flatness of right side of the face at rest and on voluntary movement, but not on emotional movement. Tongue deviates very slightly to the right side. Otherwise, nothing abnormal in the state of the cranial nerves. Patient states that for two or three months before admission the urine would escape involuntarily. Constipation had been a feature of the illness: but after admission, when she began to get syrup of the iodide of iron, the bowels became relaxed, and control over the sphincter was partially lost. It was found, after admission, that the movements were absent during sleep, and that they were increased by attention.

After admission the patient rapidly improved, the change for the better being manifested particularly in the movements of the hand. There has been no disorder of speech, either aphasic or otherwise, except occasionally some hesitation through nervousness. Patient became unable to write when her illness set in, but is now able to do so. She has no headache, and there is no trouble with the bladder or bowels. Her power of walking has improved greatly. The strength of both hands has also improved, and the right hand is now the stronger of the two, as is natural with her. When she is resting, the movements of the fingers are slight and infrequent, and might almost escape notice, but they may be much more conspicuous when she walks. There is no tonic rigidity of the affected hand, and, indeed, this has not been a feature of the case. The involuntary movements of the leg occur when she is lying in bed, as well as on standing up, and involve chiefly the calf muscles, and, next to them, the quadriceps. The contractions of the calf muscles give rise to a kind of clonus, which is not strictly rhythmical, and which occurs from 120 to 140 times per minute. The great toe tends to be over-extended.

The slight paresis of the face is still recognisable. Both visual fields are still greatly reduced in all directions. The absence of the sense of smell on the left side is persistent, and, according to Dr. Macintyre, cannot be accounted for by any local condition in the nose.

The apex beat is in the sixth space, 4 inches from the middle line. The heart sounds are normal. The urine frequently contains a trace of albumen. Ophthalmoscopic examination reveals no disease.

The treatment was at first by syrup of the iodide of iron, with the addition of iodide of potassium. In the middle of March this was replaced by a mixture containing arsenic and strychnine.

Involuntary movements of the kind presented here are described under various names—such as post-hemiplegic chorea, athetosis, mobile spasm, &c.—and may or may not be preceded by an attack of hemiplegia. It is known that they follow a cerebral lesion in children less rarely than in adults, and that they result from cerebral softening more frequently than from cerebral hæmorrhage.

The paresis of the right face and limbs points to damage to the left hemisphere, and the recurring attacks of aphasia, and perhaps, too, the pain in the left side of the vertex, together with the other facts, suggest partial obstruction of the left middle cerebral artery. The weakness of the left limbs may possibly be due to the same arterial disease, but raises the question of a similar involvement of the right middle cerebral, and the same question is raised by the bilateral restriction of the visual fields. As the olfactory bulb is supplied by the anterior cerebral, it may be either that this vessel also is diseased, or that the lesion is in the internal carotid. The fact that the anterior cerebral supplies the paracentral lobule as well as the olfactory bulb may explain a very unusual feature in this case, namely, that the hand has not suffered much more than the leg; indeed, the disorder has been, and still is, more conspicuous in the lower than in the upper limb.

The age of the patient, the long duration taken in association with the slight degree of the symptoms, and the possibly bilateral distribution of slight vascular disease, suggest atheroma rather than syphilis.

## II.—CASE OF DIABETES IN WHICH THREATENED COMA WAS AVERTED UNDER TREATMENT BY INTRAVENOUS SALINE INJECTIONS.

By DR. T. K. MONRO.

Robert S., æt. 21, carter, was admitted to the Royal Infirmary on 9th October, 1900. He had enjoyed excellent health until two months previously, when he began to suffer from insatiable hunger and thirst, with great increase in the quantity of urine. From that time onwards he lost flesh and strength, and he took to bed about a week before admission. His

family history was good. None of his relatives had suffered from diabetes.

On admission the tongue was clean, moist, and pale rather than red. (It was red for a time later on.) The bowels were regular. The heart and lungs were healthy. Nothing abnormal was detected on examination of the abdomen. Ophthalmoscopic examination showed the lenses and fundi to be normal. The temperature was subnormal. There was no cutaneous lesion. The feet were slightly œdematous. The knee-jerks were absent, even with reinforcement.

A few days after admission, and in spite of a partially restricted diet, patient was passing on an average about 205 oz. of urine, of specific gravity 1043, and containing 6,225 grains sugar. After withdrawal of most of the milk, the condition of the urine slowly improved; but patient continued to lose weight, and by 31st October, about three weeks after admission, his weight was 8 st. 10 lb., as against 9 st. 6 lb. on admission. He was passing an average of 116 oz. of urine, of specific gravity 1041, and containing 3,400 grains sugar per diem. Shortly after admission diarrhœa set in, and for some time there were five to seven motions daily. Lead and opium pill was therefore prescribed, and after a week or two the diarrhœa was brought under control, and patient ceased to lose weight.

On 8th November nitrate of uranium was begun, and this was increased later up to 4 grains, by grain doses at a time, with doubtful benefit. About this time it was found that a potato could be added to his diet without harm.

By the beginning of December, the daily average had sunk to 54 oz. urine, of specific gravity 1037, and 670 grains sugar. After 7th December, the sugar rapidly diminished, and on different days from this date to 21st December, but not on every day, sugar was completely absent. During this period the urine fluctuated between 36 and 116 oz., but in the main remained nearly as it had been before, or, if anything, was rather more abundant. The striking change in the sugar excretion set in a couple of days after the uranium nitrate was increased from 3 to 4 grains thrice daily, and was associated with certain important symptoms, including anorexia, sickness, vomiting, and abdominal pain. After a temporary recovery, the pain became severe again on the 10th, vomiting recurred, and there was drowsiness for a time in the afternoon.

Almost from the time of admission the urine had contained a trace of albumen, and no alteration in this respect was

noted at this time. The perchloride reaction was not obtained. The pain continued with intermissions or remissions until about 20th December. There was some variation from time to time in the character and distribution of the pain and in the associated symptoms. The pain was commonly most intense about the umbilicus, rather to the left side. It would extend into the left iliac region, and as high as the fifth rib. It was intensified rather than relieved by pressure. It would pass away at times almost completely. It was sometimes associated with vomiting, but there was no pain in the back or head. In the early part of the severe attack of pain on the 16th, the intensity was greatest at the left costal margin, and soon after this patient had to sit up for breath. During this period of orthopnoea the nurse counted 120 respirations per minute. The breathing was shallow at the time. Later on in the day patient became very restless and somewhat delirious, and the maximum pain shifted to the umbilicus.

Hypodermic injections of normal saline solution induced distinct though temporary general improvement, and gave relief to the pain. After the second injection, patient fell asleep, but now and then he wakened and cried out with the pain. This continued on the 17th, and on that day, apart from the pain, which was occasionally extreme, there was a varying mental condition, sometimes lethargy or delirium, and sometimes normal intelligence. At midnight an alkaline injection was introduced into the median basilic vein, and this was followed by great improvement as regards pain, breathing, and intelligence, and patient slept well during the night. Next day the pain returned, and vomiting was frequent. The intravenous injection was therefore repeated in the afternoon, and after about an hour the pain abated greatly, and patient fell asleep. After the injections the skin was moist. The injections consisted of equal parts of chloride and bicarbonate of sodium in water (1 dr. of each salt in 1 pint of water), and from 18 to 35 oz. were injected at a time. During the continuance of the serious symptoms there was marked pallor of the face, and this was noted as improved by the injections. Two well recognised features of diabetic coma were present—namely, very obstinate constipation and a highly acid condition of the urine. Even with large doses of alkali, including as much as  $1\frac{1}{4}$  oz. of potassium citrate in a day, it was difficult to alkalify the urine. But after the urine was made alkaline, it very readily decomposed. Similarly, several ounces of a purgative saline solution and 8 minims croton oil produced



only a small liquid motion the next day, and repeated enemata had no result.

On 19th and 20th December patient improved rapidly, and thereafter he quickly gained weight. By 3rd January, his weight was the same as before the onset of the alarming symptoms—namely, 8 st. 11 lb.—and at the end of January and in February, when he left the hospital, he weighed 9 st. 3½ lb., as compared with 9 st. 6 lb. on admission. The treatment in the later part of his residence included opium, arsenic, cod-liver oil, and citrate of potassium.

On 20th December, when the threatening symptoms were finally passing off, no sugar was detected in the urine, which amounted to 40 oz., with specific gravity 1016. Next day the urine measured 36 oz., with specific gravity 1024, and contained a trace of sugar. On the two following days, the urine rose to 130 and 159 oz., containing respectively 1,560 and 1,830 grains of sugar. After some time, by withdrawing the bread and potato that had been allowed, the quantities were reduced to an average of 65 oz., containing 1,344 grains sugar. While the sugar was absent from the urine during the period of serious symptoms, the quantity of urea varied, but in the main tended to be low. The temperature was subnormal throughout his residence, but rose a little in connection with the injections.

Patient was sent to the Convalescent Home on 8th February, cured so far as symptoms were concerned.

He reported himself on 27th February, before resuming his occupation. His weight was then 9 st. 5 lb. He was still free from polyuria, but a specimen of urine obtained had a specific gravity of 1041, and contained 34 grains of sugar per ounce.

The intense epigastric pain, the anorexia, vomiting, obstinate constipation, restlessness, delirium, drowsiness, disturbance of respiration, high acidity of the urine with diminished quantity of sugar, and the subnormal temperature, appear to justify the description of this case as one of threatened diabetic coma. The striking benefit—transient at first, but after a time lasting—obtained by the treatment employed is in favour of this view, and encourages one to employ such procedures in good time, since the outlook, after coma has fully set in, is so nearly hopeless.



III.—CASE OF MALIGNANT DISEASE OF THE DESCENDING COLON  
TREATED SUCCESSFULLY BY OPERATION.

BY DR. DAVID NEWMAN.

J. M., aged 39, began to complain of vague and uncertain abdominal symptoms in September, 1900. At first only discomfort was complained of, but latterly he had considerable pain throughout the abdomen. The progress of the disease was at first insidious, sometimes the patient complaining of diarrhoea, at other times of constipation, but at no time was blood observed to be present in the evacuations. He complained of occasional sharp pain in the left iliac region, occasionally amounting to a burning sensation, especially after movement of the bowels. Towards the end of December distension of the abdomen became a prominent feature, and at this time considerable difficulty was experienced in producing a movement of the bowels. At the end of December, 1900, he consulted Dr. Herbertson, of Johnstone, who discovered a swelling in the left groin, freely movable and painful on pressure, and he came to the opinion that there was a tumour in the lower part of the descending colon. The patient was sent to Dr. Newman, and he concurred in Dr. Herbertson's diagnosis, but was disposed to believe that the swelling was partly the result of a faecal accumulation above the tumour.

The patient was admitted to the "Central Home" for observation on 7th January, 1901. Under treatment by laxatives the swelling in the left groin was greatly diminished, the abdomen became flat, and the patient was generally relieved from suffering; but, notwithstanding the continuance of the treatment until 21st January, a small firm mass remained. It was situated about 2 inches above Poupart's ligament, and 2 inches within the anterior superior spinous process of the left ileum. The mass, which was about the size of a large walnut, was freely movable, slightly nodulated, and did not alter its form on pressure.

On 21st January an exploratory incision was made over the swelling. On opening the peritoneal cavity the lower part of the descending colon was exposed, and found to contain in its walls a nodulated tumour, an inch and a half in length, and involving the whole circumference of the gut. The upper and lower ends of the colon were clamped, 4 inches of the bowel resected, and an end to end anastomosis was made by introducing a large-sized Murphy's button; and by suturing over the button, an additional security was obtained.

The approximation of the two segments of bowel was accomplished without much dragging. The Murphy's button came away on the eighth day, and the patient made a good recovery.

On microscopic examination the tumour proved to be an epithelioma, and the bowel was so completely occluded by it that only a No. 12 bougie could be passed through the opening.

The patient, who is now in America, reported himself well in August, 1901.

IV.—CASE OF STRICTURE OF THE UPPER END OF THE ŒSOPHAGUS  
WHERE GASTROSTOMY AND SUBSEQUENTLY TRACHEOTOMY  
WERE PERFORMED.

BY DR. DAVID NEWMAN.

Mrs. W., aged 35, a delicate-looking woman, enjoyed good health until the beginning of summer, 1900. In June she suffered from a sore throat, the description of which was vague. In August the pain in the throat became associated with difficulty in swallowing, culminating in complete dysphagia in the beginning of September. From that time until 8th October, when first seen by Dr. Newman, along with Dr. Ross, of Chryston, she had been nourished entirely by rectal feeding. When first examined the patient was extremely emaciated, pale, and very weak; pulse poor (75); respirations, 22 per minute. Examination of the throat by the mouth revealed some hyperæmia of the pharynx, the larynx was free from disease, but on palpating the neck a hard, firm swelling was detected immediately behind the thyroid cartilage, involving the upper part of the Œsophagus, and on attempting to pass a small bougie, obstruction was found to be complete. The patient was so weak that the advisability of performing a gastrostomy was doubtful. She was, however, admitted to the "Central Home" on 8th October, and as a last resource gastrostomy was performed, and the stomach opened on the third day after being exposed.

The incision was made through the abdominal parietes, an inch below and parallel to the left costal cartilages. It was an inch and a half long, and extended outwards and downwards from the margin of the left rectus muscle. A couple of square inches of the stomach wall was dragged through the incision in the parietes, and a circle of sutures, each including about one-third of an inch of the stomach wall, was passed through the serous and muscular coats. The radius of this circle was

about one-third of an inch. Each suture overlapped its neighbour by about one-sixteenth of an inch, so that when they were all introduced they resembled in form the tyre of a wheel. After all the sutures had been inserted in the stomach wall, the free ends were passed through the subcutaneous tissue and skin only, and tied externally, so that when the operation was completed, an area of stomach wall about the size of a shilling was exposed to view. Through the centre of this area two silver sutures were passed, parallel to one another, and about a third of an inch apart. This method of stitching, by which the peritoneum and muscular tissue were left free, and in full contact with the wall of the stomach, gives a broad base for adhesions, and ensures the formation of a complete sphincter. In making the incision through the parietes, the fasciæ only were divided by the knife; the muscular fibres were separated with a director, not cut across. In this way they also act the part of sphincters.

Between the date of operation and 20th November the patient made comparatively slow progress, although she certainly gained strength. The tumour in the œsophagus remained practically stationary. In the hope that some improvement might take place by her returning home, she was dismissed on 20th November.

On 28th December, Dr. Newman was again asked to see her, when it was found that the growth in the upper part of œsophagus was pressing upon the larynx to such an extent as to impede respiration. Tracheotomy was therefore performed on 7th January, and the patient lived until 8th April, 1901. The situation of the growth in this case gave rise to the hope that the radical operation of œsophagectomy might be resorted to if the patient's strength had materially improved; but she had so long been subjected to complete stenosis, and her strength thereby reduced, that she was unable to recover sufficiently to justify such an operation, associated as it is with considerable shock. The gastrostomy and subsequent tracheotomy prolonged her life by six months, but at no period in the course of that time had her strength improved sufficiently to justify the immediate risks of an œsophagectomy.

#### V.—FURUNCULOSIS OF THE EXTERNAL AUDITORY CANAL.

By DR. J. GALBRAITH CONNAL.

Furuncle in the external auditory canal is one of the less common diseases of the ear. Taking the statistics of the Glasgow Ear Hospital for the last four years, where there

were on an aggregate 5,653 cases, furuncle occurred 136 times, or about  $2\frac{1}{2}$  per cent of all cases of ear disease. Last year there were 41 cases, in the great majority of which the furuncle occurred as the primary and sole lesion; but in a minority (30 per cent) it was associated with other lesions, notably chronic purulent inflammation of the middle ear, less commonly ceruminous collections and eczema of the external auditory canal.

Löwenberg has stated that this disease is due to an invasion of the ceruminous or sebaceous glands of the canal by the staphylococcus aureus or albus; but probably any local abrasion of the epithelial lining of the canal affords a fitting nidus for the staphylococcus, and in the presence of a suitable constitutional condition of the patient may produce the disease. Hence it is often met with during the course of an eczema of the canal, when the itching impels the patient to scratch the part with a pin or the finger nail, and thus to give rise to an abraded surface. The same reason holds good with regard to ceruminous masses, the sense of an obstruction in the canal leading the patient to make efforts to remove it with ear-picks or pins.

There is a peculiar periodicity in the appearance of these cases, so much so that the term epidemic has been applied to them. Gruber quotes two instances of this—an epidemic in Paris in May and June, 1863, and in Vienna a little later (*Text-book, Diseases of the Ear*, p. 234). Patients with furuncle present themselves most commonly in the spring and autumn months, when one may see from ten to twelve cases in a week; on the other hand, weeks or even months may elapse and hardly a single patient present himself for treatment.

Though furuncle of the auditory meatus is one of the less common diseases of the ear, it is still worthy of some consideration when one realises that it gives rise to severe pain, much local and constitutional disturbance, and for a time occasions anxiety to the physician in attendance.

A common history of this affection occurring primarily may be illustrated by the following case:—

Christina S., 21 years of age, complains of dulness of hearing, of severe pain in the right ear with tinnitus of a "beating" character, and slight attacks of giddiness of one week's duration. She states that the illness came on suddenly, with severe pain in the right ear, which has continued since. The tinnitus is described as of a beating or hammering character. She has never had any ear affection previous to



onset of present illness. On testing the hearing power, it is found that the dulness of hearing is well marked. A watch which should be heard at 40 inches is only heard at 1 inch. The left ear is normal = W.R.  $\frac{1}{40}$ , W.L.  $\frac{1}{40}$ . With tuning-forks to the right ear, bone conduction is in excess of air conduction; while with the tuning-fork applied to the forehead, the sound is referred to the affected ear (Weber's test). Examination objectively shows a furuncle on the floor of the external auditory canal, and extremely sensitive to touch with the probe. The furuncle was incised and iodoform ointment prescribed. In three or four days the patient was better—the hearing restored, the tinnitus and giddiness had disappeared.

The clinical history here given in *epitomé* illustrates the leading local symptoms of this affection, namely, pain, dulness of hearing, tinnitus, sometimes giddiness, and occasionally a slight discharge from the ear.

Pain is generally the prominent symptom, and compels the patient to seek relief. It is often described as agonising, shooting from the ear over the side of the head, and preventing sleep at nights. Movements of the jaw, as in eating, generally aggravate the pain, while any movement of the auricle, or the introduction of an aural speculum into the external auditory canal for the purpose of examination, can hardly be tolerated. The pain is generally unilateral, but not always so, for rarely one meets with furuncular inflammation in both ears.

It is to be noted, however, that the nearer the furuncle is to the outlet of the canal the less severe is the pain, so that now and again one sees cases with slight œdema over the mastoid and a furuncle near the outlet of the meatus, and yet there has been no complaint of pain. But, as a rule, pain is the prominent symptom.

The dulness of hearing in the affected ear is generally due to the mechanical obstruction in the canal, and disappears on the removal of the obstruction. Sometimes it is due to a coincident hyperæmia of the labyrinth, in which case the dulness of hearing may not improve after the local condition in the external canal has been remedied. A case illustrating this came under my care some years ago. A young lady, 20 years of age, had a furuncular inflammation on the posterior wall of the external auditory canal. The history was suggestive of recurrent furuncle in the same ear for about two months previous to my seeing her. She complained of great pain in the ear, but would not allow an incision to



be made. In about a week's time the furuncle discharged into the canal. She was extremely dull of hearing in the affected ear, and the tuning-fork reactions pointed to disturbance of the labyrinth. There has been no improvement in the hearing since. The objection to this theory is, that I had no opportunity of testing the hearing before she presented herself complaining of pain in the ear. Still, when an intelli-



FIG. 1.

Boy, 8 years of age. Furuncle in external auditory canal. Œdema over the mastoid, displacing auricle downwards and forwards.

gent patient speaks bitterly of dulness of hearing in an ear with which she asserts she formerly heard well, one may be assured that at all events there has been a marked aggravation of the deafness. These cases are, however, rare.

The tinnitus aurium—which in this affection is usually described as of a buzzing, beating, or hammering character—and also the giddiness, are generally mechanical in their origin, and disappear on the removal of the cause. When

subjective noises in the ear are described as beating or hammering, we refer them to some vascular derangement either in the labyrinth or middle ear, and in this affection we know that the middle ear shares in the vascular excitement of the outer canal.

In cases of primary furunculosis one sometimes meets with a history of discharge from the affected ear. On enquiry,

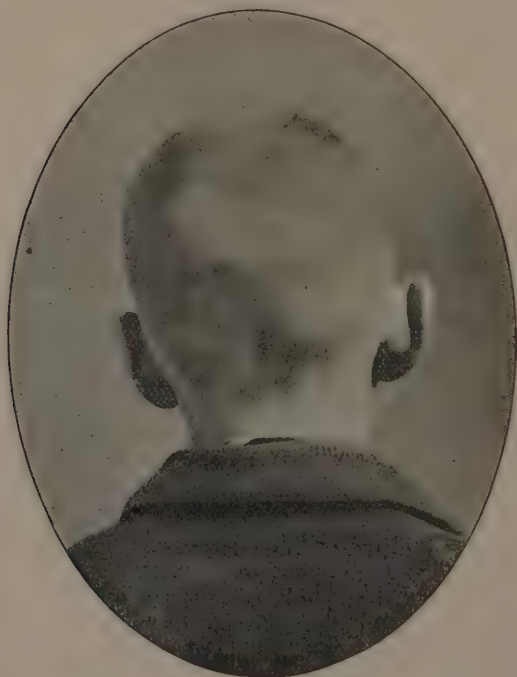


FIG. 2.

Boy, 11 years of age. Furuncle in external auditory canal. Œdema over the mastoid, with displacement of the auricle forwards.

this discharge will be found to be scanty, and often ropy. It is to be distinguished from the serous discharge of an eczema, and is one exception to a general rule that purulent discharge from the ear denotes a purulent otitis media. As previously mentioned, the pus contains the staphylococcus aureus or albus. Out of a fair number of culture experiments which I have made, or which Dr. R. M. Buchanan has done for me, the large majority of cases showed the organism to be staphylo-

*coccus aureus*, a few the *staphylococcus albus*, and rarely a mixed growth of these organisms.

Of the constitutional symptoms, a moderate degree of febrile reaction is common. As a rare symptom, I lately met with a case of spasmodic torticollis, which I thought was due to recurrent furuncle in the external auditory canal.

While these are the main subjective symptoms, the objective



FIG. 3.

Man, 26 years of age. . Furuncle in the left external auditory canal. Swelling over the mastoid, displacing the auricle forwards.

are the more important. Examination, however, must be carefully undertaken. Movements of the auricle or attempts to introduce an aural speculum may cause the most exquisite pain. Commonly, an examination can be made without introducing a speculum into the canal. Reflected light from a forehead mirror will in most cases show the characteristic swelling, and on touching this with a probe, even gently, the patient will complain of pain. In some cases, instead of a

boil, all that can be seen is a circumscribed reddish-yellow discolouration of the skin; but the characteristic is, that on touching this spot with a probe, you elicit very smart pain.

In the differential diagnosis one must remember (1) that an exostosis in the external meatus is often very sensitive to touch, but a little care will generally exclude this condition; (2) purulent middle ear mischief involving the antrum and



FIG. 4.

Girl, 19 years of age. Furuncle in left external auditory canal. Œdematous swelling over the mastoid and squamous portions of temporal bone, and extending forwards to the eyelids.

mastoid cells may burst through the cortex of the bone, and present in the external auditory canal as (a) a saccular bulging on the posterior wall, or (b) having burst into the canal, may give rise to a sinus with small pouting granulations. Here the differential diagnosis is greatly assisted by the presence of middle ear mischief, and by the fact that these two conditions (a and b) always occur on the posterior wall of the osseous canal.

*Treatment.*—Locally I believe in early incision of the furuncle, and the application of an ointment which Dr. Barr recommends, and which experience has shown to be of value:—Iodoform, 4 gr.; menthol, 2 gr.; vaseline, 1 dr.; smeared on cotton plugs, and introduced into the canal of the ear twice or thrice daily. Gruber's gelatine bougies containing morphia are also of service, more especially in the earlier part



FIG. 5.

Same case as Fig. 4. Shows the cedematous condition of the eyelids on the left side.

of the illness, or if the patient will not allow the boil to be incised.

Ointments and instillations applied locally are numerous, but the main purpose of them all depends on their antiseptic properties. Poultices generally do harm by producing a sodden condition of the tissues, which favours microbic proliferation.

If, however, the furuncle is not a primary condition, but



occurs associated with some other lesion—suppurative middle ear mischief, eczema of the canal or plugs of cerumen—these conditions would demand appropriate treatment. In furuncle associated with purulent otitis media, one is occasionally surprised to note how quickly the middle ear discharge dries up after the inflammatory condition in the outer canal has been remedied.

The constitutional treatment of this affection is of prime importance, and more especially where there is a tendency for the boils to recur in crops. In such cases the dietary must be carefully regulated—starchy and sugary foods should be withdrawn. Each individual patient should be treated according to his requirements. Tonics and aperients may be necessary. The aim in view should be a plain, wholesome, nourishing diet, with plenty of outdoor exercise. In emphasising the necessity for supervising the dietary in this complaint, Sir Wm. Dalby (*Diseases of the Ear*) relates the case of a strong athletic young man, who for three years had never been one week quite free from a boil in either ear. In this instance the patient had been in the habit of taking a pint of beer daily. This was withdrawn and a little claret substituted, with the happiest result.

In discussing the constitutional treatment of furuncle, the tendency of bromides and iodides to produce a pustular eruption must be borne in mind. Alum and nitrate of silver applied locally are also said to favour their development.

This is the type of case commonly met with: but there is another class where, in addition to the extreme pain, dulness of hearing, and other symptoms we have already mentioned, there is marked swelling over the mastoid, which is confusing, and leads to errors in diagnosis. The error is pardonable. The severity of the pain in the ear and head, the dulness of hearing, the tinnitus, the giddiness, the constitutional disturbance, feverishness, with the presence of a scanty discharge from the ear and swelling over the mastoid, give a clinical picture which is alarming, and strongly suggestive of mastoid mischief. Apart from a local examination of the external auditory canal, it is hardly conceivable that such local and constitutional disturbance can arise from a boil in the outer ear.

To rightly understand this condition, the anatomical structure of the outer ear must be borne in mind.

*Anatomical considerations.*—The outer part of the external auditory canal is not a complete cartilaginous tube. Its continuity is interrupted by two or three transverse fissures—the

fissures of Santorini. These transverse clefts are filled in by fibrous tissue, which is continuous with the cellular tissue over the mastoid process. Again, the upper part of the cartilaginous tube does not meet, the roof of the canal being filled in with dense fibrous tissue, which serves the function of closing this upper gap, and at the same time unites the cartilaginous part of the auricle to the bony part of the canal. This upper fibrous structure is continuous with the loose cellular tissue around the ear, in front, above and behind. Hence it will readily be understood that inflammatory, and more especially septic inflammatory conditions may spread by continuity of tissue from the external auditory canal, through the fissures of Santorini or along the fibrous band in the roof of the canal, to the cellular tissue over the mastoid, simulating closely mastoid periostitis, and that the œdema may extend forwards, and give rise to an œdematous condition of the eyelids on the same side.

A reference to the accompanying illustrations will make this clear, and show how closely this condition arising from a furuncle in the external auditory canal may simulate graver conditions involving bone lesions, and will emphasise the fact that a correct diagnosis and prognosis can only be made after a thorough inspection of the external auditory canal.

*Fig. 1.*—A boy, 8 years of age, complained of deafness and great pain in right ear of eight days' duration. The pain was severe, and prevented him sleeping at night. He had always been a strong healthy boy till onset of present illness. He was seen on the 5th September for the first time (*Fig. 1* shows his condition at this date). Examination showed two furunculi—one on the floor and one on the posterior cartilaginous wall of the canal. There was marked swelling over the mastoid, displacing the auricle downwards and forwards, while the œdema involved the eyelids on the same side.

An incision was made into the furunculi in the canal. The pus showed a pure culture of staphylococcus aureus. By the 13th September (eight days later) he was quite better.

*Fig. 2.*—Boy, 11 years of age, with much the same clinical history. It shows pretty marked forward displacement of the auricle. Here there was a furuncle in the canal, at the junction of the floor and posterior wall. One week after incision the patient was quite well.

*Fig. 3.*—Man, 26 years of age, complained of deafness, pain in the left ear, tinnitus, and occasional giddiness. Hearing power (watch)—right ear,  $\frac{3}{8}$  ft.; left ear,  $\frac{1}{3}$  ft. Furuncle in left

ear at junction of floor and posterior wall of the canal. The pus showed mixed growth of staphylococcus aureus and albus.

*Figs. 4 and 5* show different aspects of the same case—a girl, 19 years of age, seen for the first time on the 22nd December, with a history of dulness of hearing, severe pain in the left ear of three weeks' duration. She was feverish, and had profuse sweatings at night. There was swelling behind the auricle, extending over the squamous portion of the temporal bone to the front of the ear, and forwards to the left eyelids, which were nearly closed. Examination showed a large furuncle at the junction of the roof and posterior wall of the canal, from which pus was liberated by incision. Bacteriologically, the pus showed a pure culture of staphylococcus aureus. In about ten days she was quite well.

In this case the inflammatory disturbance had involved the fibrous band in the roof of the canal, and from this had spread to the loose cellular tissue around the ear.

An interesting point in this case is that one month afterwards she came with a furuncle in the right ear (opposite side). An early incision, however, led to a rapid recovery.

An inspection of the photographs, and a perusal of the clinical history of these cases, will show that it is extremely difficult in some instances to differentiate between a mastoid periostitis and an œdema over the mastoid arising from a furuncular inflammation in the external auditory meatus. The difficulty in diagnosis is increased if there is, as sometimes happens, a chronic purulent otitis media. Personally, I would be inclined to emphasise the importance of a thorough but gentle examination of the external auditory meatus, when the presence of a localised sensitive furuncular swelling would, I think, settle the diagnosis.

It has been pointed out that in furunculosis the retro-auricular groove is obliterated, while in implication of the mastoid the retro-auricular groove is maintained. An examination of the photographs, however, shows that while this may be true in some cases, it is not always correct. In *Fig. 1* and *Fig. 3* the retro-auricular groove is clearly shown.

MEETING XV.—19TH APRIL, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

I.—PATIENT ON WHOM SUPRA-SCAPULAR AMPUTATION WAS PERFORMED THREE YEARS AGO FOR SARCOMA, AND WHO NOW HAS RECURRENCE ELSEWHERE.

BY MR. H. E. CLARK.

Mr. Clark showed a patient, a man, aged 52, on whom he had performed supra-scapular amputation three years ago for sarcoma of the pectoral and deltoid muscles. The patient first came under his care about fourteen years ago with a small, well-defined and encapsuled sarcoma of the deltoid muscle. This was enucleated, and on microscopic examination was found to be mainly of the spindle-celled variety, but with some admixture of round cells in the deeper part of the tumour. Recurrences took place every few years; until at length it was decided to remove the whole upper limb, and to freely take away the muscles and skin covering the chest wall. This was done (as stated above) three years ago, and constituted the fifth operation of removal. In consequence of the wide removal, it was difficult to get skin covering, and the whole of the integument of the back of the arm (as far as the elbow) was brought forward to cover the front of the chest wall. Much of this long flap, however, died, and the process of healing in front was largely by granulation, aided by free grafting. A good result was obtained, and for two and a half years he was able to get a living as a light porter. Lately he returned complaining of pain and tenderness above the clavicle, and, on examination, there were found to be fibrous thickenings of the cut ends of the brachial cords. It was seen, also, that there was an extensive recurrence of sarcomatous growth in the substance of the lower part of the erector spinæ muscle of the right side (the same side as the amputation). Careful examination as to the condition of the liver, lungs, and kidneys served to show that there was no evidence of secondary deposit in them, and the bones seemed also free from suspicion.

Microscopic sections of the tumour removed at the fourth operation were submitted by Dr. Hugh M'Laren, and were chiefly remarkable for the very large admixture of myxomatous tissue with the spindle cells.

Mr. Clark asked the opinion of the members as to (1) whether the tumour mass in the erector spinæ was to be regarded as a secondary infection through the blood stream, and (2) as to the policy of attempting a removal of the mass.

## II.—PENETRATING BULLET-WOUND OF THE BRAIN: REMOVAL AND RECOVERY.

BY DR. JAMES LAURIE.

R. M'C., aged 15 years, was admitted to the Greenock Infirmary on 24th September, 1900, suffering from the effects of a bullet-wound of the brain, having been accidentally shot by a companion who was playing with a toy pistol.

My colleague, the late Dr. Black, saw him at the time of the accident, and noted "convulsive twitching of right side of the face."

The following note was taken of his condition by the house surgeon on his admission:—

"The patient was admitted about 4.45 P.M., in a condition of almost complete unconsciousness. He responded to vigorous stimulation, but was unable to answer questions or comply with requests made to him. His colour was good. His respirations were regular, but sighing. His pulse full and regular. Pupils, equal and normal, reacted to light. Right conjunctiva was insensitive, while the left was sensitive to touch. There was paralysis of the right side, especially marked in the face and arm. The paralysis of the leg was less marked, and the plantar reflex was present, though diminished. He vomited copiously shortly after admission. Examination showed a small wound of the left frontal bone, situated an inch and three-eighths above the line drawn through the supra-orbital margin, and seven-eighths of an inch to the left of the middle line of the head. The wound was circular, and about one-eighth of an inch in diameter, surrounded by slight bruising. On probing the wound, the bullet was found to have penetrated the skull and entered the brain. The probe passed backwards, downwards, and outwards."

I saw him at 7.30 P.M. The paralysis of the leg was now



complete, with absence of the plantar reflex. There was also complete right-sided paralysis, the patient quite unconscious. Pulse, 76, irregular and intermittent.

A sterilised probe, by its own weight, passed its whole length into the track of the bullet. An *x*-ray photograph was taken in two positions—antero-posteriorly and laterally—and the position of the bullet localised.

The scalp having been prepared, he was operated upon at 10 P.M. Chloroform was the anæsthetic given. A large horse-shoe incision was made in upper and posterior parietal regions, and the flaps reflected downwards. A trephine opening was made in the parietal bone behind the Rolandic fissure, and coinciding with the probable direction of the bullet.

Neither hæmatoma nor bullet being found after opening the dura, another trephine opening was made farther back, and the two openings connected by sawing the bridge of bone, using the "Gigli" saw.

Inserting my finger in the latter opening, and sweeping the occipital bone with it, I got the bullet between the membranes and the brain. The dura was replaced, and the part kept moist with warm saline solution. I next followed the track that the bullet had made, with a long probe, bringing it out through the occipital bone by a small trephine opening, having first attached a thread to the eye of the probe and connected it with a No. 8 Jacques sterilised catheter, in which openings were cut similar to a drainage-tube. This passed from the frontal opening through the whole length of the brain, and emerged at the small opening just described. The discs of bone were replaced and a drain put in the flap, the wound being dressed with sterile gauze and sterile wood-wool pad.

He passed a good night, sleeping quietly; no sickness. At 6 A.M.—temperature, 99°; respiration, 24.

During the following day (the 25th) he had hiccough and could not swallow, and recourse was had to rectal feeding (only necessary for this and the succeeding day). On the 27th he was able to drink some milk, subsequently being fed upon milk, beef-tea, chicken soup, and Brand's essence. From 27th September till 1st October he continued gradually improving and gaining strength. On 2nd October he could protrude his tongue when asked, and the next day asked for a biscuit. On 5th and 6th October his pulse was 47, very slow and weak; temperature, normal. Hypodermics of strychnine were given, and half an ounce of whisky every three hours. He continued taking nourishment well. The whisky was stopped on the

6th, and on the 8th he was stronger and brighter, and asked for a book with pictures. *Black and White* was given him, and he was able to turn the pages himself with his left hand. From this date onwards his intelligence gradually improved and returned.

On 28th September (fourth day since accident) there was movement of the right leg when touched, and on 8th October he could move his arms. Improvement was now continuous and progressive, and on 4th November he was able to write his name with his right hand, and on 16th November he carried a pail of water the whole length of the ward. It is to be noted that the power of the limbs recovered quicker than speech.

On 26th September (second day after operation) 6 inches of the drainage-tube were cut off, and the remaining 3 inches removed on the 29th, the drain beneath the flaps having been removed the previous day.

The replaced bone discs held and the wound healed by primary union, with the exception of a small point at the apex of the incision, which healed by granulation. The highest temperature recorded was 100° F. at 10 P.M. the night following the operation. For the greater part of the time it was sub-normal.

The patient was kept in hospital until 10th January, 1901.

#### REFERENCE.

Keen and White, *Surgery*, 1896—Fluhrer's case.

### III.—MODIFIED KRASKE OPERATION FOR MALIGNANT DISEASE OF THE RECTUM, WITHOUT A PRELIMINARY COLOTOMY.

BY DR. JAMES LAURIE.

C. D., aged 31, engine-fitter, was admitted to the Greenock Infirmary on 26th November, 1900, complaining of difficulty of defæcation.

Six months ago he noticed that he was having an occasional attack of pain of a sharp, shooting nature in the neighbourhood of the anus, and also referred to the rectum. These pains would last for a few minutes and then pass off, and he would feel relieved. The pains invariably came on when he was standing, and left him when he lay or sat down. At this time he became aware that he had difficulty in getting his bowels moved when he went to stool, and, occasionally at those times, but not invariably, he experienced an aggravation of the pains

when the fæces were passing the anus, and always had immediate relief when the motion was passed.

Previous to six months ago he was inclined to be constipated, but did not think unusually so. The motions, from being of a natural character, during the last six months have gradually assumed a ribbon-like appearance. He has also been greatly troubled with flatulence, which pained him somewhat across the abdomen, but on breaking wind was relieved. Sometimes, on passing wind, a slight watery discharge would come away.

Patient states he has always been a healthy man, except for an illness he had in Australia six years ago, which his medical attendant told him was enlargement of the liver. Nine years ago he had gonorrhœa with paraphimosis, for which he underwent treatment and was cured in about four weeks. He cannot recollect that his hair fell out at that time, or that he suffered from sore throat. For the last three or four years he has been very intemperate.

*Examination.*—Patient is well built and well nourished; his back, especially between his shoulders, is covered with acne spots and numerous small, white cicatrices, probably the remains of previous acne rash. Nothing abnormal can be made out in the internal organs by physical examination.

*Rectal examination.*—On examination *per rectum*, a hard, tuberculated mass could be felt, attached to and encircling the inner wall of the rectum about an inch and a half from the anus. The finger can be passed beyond the growth for about an inch. There was no blood on the examining finger when withdrawn, and the patient states he is not aware that he ever passed blood *per rectum* since he became cognisant of his present condition.

On 19th December chloroform was administered, and the condition of the growth examined more particularly. No affected glands could be felt, and the above report corroborated. A wedge of the growth was removed and submitted to Dr. Leslie Buchanan. Subjoined is his report:—

“Growth is a cylinder-celled epithelioma of probably moderately slow growth, owing to the development of much fibrous tissue between the epithelial masses.”

Operation was performed on 30th December as follows:—

1. An incision to the left of middle line from the tip of the coccyx.
2. Freeing of the integuments, &c., from the sacrum.
3. Removal of coccyx and lower two pieces of the sacrum with the chisel and a pair of scissors curved on the flat.
4. Hæmorrhage was very free and gave some trouble in arresting it.

This is undoubtedly a very important part of the operation. 5. Freeing of bowel by fingers, preservation of levator ani muscle and section of nearly 2 inches of the bowel with end to end suture. 6. Wound packed with sterile gauze, external wound closed at upper and lower end only. The wound was allowed to heal by granulation, being dressed daily with sterile gauze packing. 7. No preliminary colostomy was performed.

*Analysis of treatment.*—Patient was very much collapsed after the operation, and until 4th January complained of abdominal pain, with vomiting, pain, and occasional hiccough. Morphia hypodermically required to be given.

The highest temperature at this period was  $101.4^{\circ}$ , and the average  $100^{\circ}$  in the 24 hours. An attack of bronchitis until 14th January was the only complication.

Gradually those symptoms subsided. The bowels moved on 3rd January through the wound—the stitches having given way. The wound was douched twice daily with hot saline solution, remained free from suppuration, and packed with sterile gauze. He was taught how to wash the parts with an enema in the morning, and so ensure movement of the bowels, cleanliness, and cover all with a pad.

Dismissed well on 3rd April, 1901.

#### REFERENCE.

*Annals of Surgery*, vol. xxxii. Dr. Jno. B. Deaver reports four cases—two had sphincteric action, the others had not.

#### IV.—ACUTE APPENDICITIS: REMOVAL OF APPENDIX FOUR HOURS AFTER ONSET OF SYMPTOMS: RECOVERY.

BY DR. JAMES LAURIE.

A. M'P., aged 24, was suddenly seized, while walking home, with severe abdominal pain, about 7 P.M. on the evening of 20th January, and was admitted the same evening to the Greenock Infirmary. He managed to reach the close of the land in which he lives, when he collapsed and had to be carried upstairs.

Dr. Allen, assistant to the late Dr. Black, saw him soon afterwards, and recognised the seriousness of his condition. I was asked by Dr. Allen to see him, and found that marked symptoms of peritonitis were present, his pulse small and thready, face pinched and pale, severe abdominal pain limited to the right side of the abdomen, which was rigid and retracted.

A diagnosis of acute appendicitis, probably perforative, was made, and immediate operation advised. Dr. Black saw him later, and concurred in the opinion given.

He was removed to the infirmary, and I operated upon him at 11 P.M.

The usual incision was made, and the appendix, which was a large one, was found easily and removed close to the cæcum. On opening the peritoneum there was a moderate gush of serous fluid and just a suspicion of pus.

There was no attempt at adhesions forming. The cavity was washed out with saline solution, and the wound stitched with silkworm gut.

A drain was inserted, and removed in a few days. The wound healed by primary union, the patient making a good recovery. The lumen of the appendix was filled with faecal concretions, and the mucosa was acutely inflamed. This was verified by the pathologist's report.

The advisability of operating so early (four hours) after the onset of symptoms may by some be questioned, but I think that the extreme collapse and severity of the symptoms strongly suggested a perforative lesion, either of the stomach or appendix, and to delay would have been unjustifiable and dangerous to the patient—in fact, it was the absence of flatus when the peritoneum was opened that cleared up the point that it was not a perforation of the stomach I had to deal with, as the external appearance of the appendix did not at first suggest it as the cause of such severe symptoms.

The patient was dismissed from hospital on 15th February, well.

#### V.—CHANGES IN THE PERIPHERAL NERVES IN A CASE OF DIABETES MELLITUS.

By DR. JOHN WAINMAN FINDLAY.

*Clinical note.*—P. G., aged 41, ironfitter, was admitted to Ward 11 of the Glasgow Royal Infirmary, under the care of Dr. T. K. Monro, on 2nd October, 1899, suffering from diabetes. For the previous nine months there had been polydipsia, polyphagia, glycosuria, and polyuria. A little over six months ago he improved under special dieting and treatment, but since the treatment was stopped he has been getting steadily worse. He had pleurisy on the left side three months ago, and the same affection on the right side two months ago.



On admission to the infirmary, the report states that patient is considerably emaciated: thirst is very troublesome; skin is dry, but without eruption; there is dimness of vision and signs of commencing cataract in both eyes; and that there is a slight cough, accompanied by very little spit. There are evidences of softening at both apices. Knee-jerks are absent: there is great muscular weakness, but no disturbance of sensation. For the first fortnight after admission the specific gravity of the urine ranged from 1032 to 1040, the quantity of urine from 70 to 80 oz., and the total amount of sugar from 2,900 to 5,100 grains per diem. There was no albumen in the urine.

Under treatment by means of restricted diet and morphia, the specific gravity of the urine rapidly fell to about 1017, and the sugar came down to 630 grains per diem, and on the 26th inst. there was no sugar. Coincidentally with the diminution in the amount of sugar, there were abundant evidences of steadily advancing pulmonary disease and cavity formation, accompanied by a mild degree of hectic fever. Tubercle bacilli were found in the sputum. Sugar was never again present in any quantity, and several times the yeast test failed, though phenylglucosazone crystals could always be prepared from the urine. For the last week of life there was considerable œdema of feet and legs as far up as the knees; slight shooting pains were present in the legs, but there was never any undue tenderness noted in the lower limbs. On 5th November patient suddenly became very weak, perspired profusely about the head, and, after a short time of embarrassed breathing, died.

Professor Workman performed the *post-mortem* examination on 6th November, and the following is his report:—

"The body is very much emaciated, and there is hardly any subcutaneous fat in the abdominal walls. *Post-mortem* rigidity is passing off.

"*Thorax*.—The pericardium is pale, but healthy, and contains about 8 oz. of clear serum. The heart is considerably atrophied, and there is a complete absence of fat from the surface, which makes the coronary arteries—otherwise healthy—appear unduly prominent. All the valvular structures present quite normal appearances, and the aortic and pulmonic curtains are competent. At the commencement of the aorta there is some atheroma and calcareous deposition in the inner coat. In the right lung the superior lobe is almost completely excavated by tubercular disease, and in the middle and inferior

lobes there are areas of insufflation pneumonia, with excavation commencing in several points. The tubercular disease has extended to the left lung also, and several abscess cavities are present in both lobes.

*"Abdomen.*—The stomach is normal in size, and contains a quantity of coagulated milk. The mucous membrane presents healthy appearances. The small intestine shows considerable hypertrophy of the mucous membrane of the duodenum and jejunum; the ileum is atrophied, and shows signs of catarrh. Towards the lower end of the ileum are numerous small tubercular ulcers, and similar ulcers are seen in the upper part of the colon. The liver is dark in colour, and apparently free from fatty changes. Spleen is normal, and the same may be said of the pancreas, but the absence of surrounding fat makes the latter gland appear more prominent than usual. The suprarenals are healthy looking. Kidneys are large and congested, and an interstitial nephritis of mild degree is noted. In the lower part of left kidney is a large cyst, with a thick, opaque wall, and filled with a creamy fluid containing leucocytes. This is evidently due to pus undergoing caseous transformation. The urinary bladder is slightly hypertrophied, but otherwise normal.

*"Nervous system.*—Brain shows excess of fluid in the soft membranes and ventricles. The cord is examined, and likewise several nerves, but nothing abnormal is detected."

*Microscopical examination.*—The liver shows well-marked cloudy swelling or albuminous degeneration, which in some places has gone on to fatty degeneration, as shown by the darkening of the granules in sections stained with osmic acid. There is also passive venous congestion and commencing cirrhosis. The kidneys show marked cloudy swelling and commencing fatty degeneration of the epithelium lining the convoluted tubules. Hyaline degeneration is seen in the cells of the straight and collecting tubules, and there is all over a considerable increase in the number of connective-tissue cells and fibres. The pancreas, though normal to the naked eye, presents a slight degree of cirrhosis. Around all the ducts there is a considerable layer of dense fibrous tissue, with few cellular elements; there is in the interlobular areas, and between the individual acini throughout the gland generally, an increase of the connective-tissue, but this overgrowth is most marked in the region of the ducts. In parts, a round cell infiltration may be seen between the acini. Several of the ducts are in a condition of catarrh, and in such cases the

lumina are filled with proliferated and desquamated cells. The glandular epithelium throughout is very granular, and as a whole stains well, though here and there small collections of cells have hardly stained at all, suggesting a necrotic condition. Some of the arterioles show endarteritic changes, and also slight thickening of their adventitiæ.

*Nerves*.—Small portions of nerves were placed in 1 per cent solution of osmic acid for twenty-four hours, after which they were teased and mounted in glycerine. Other pieces of nerves were fixed in 10 per cent solution of formaline in water, or in Weigert's chrome alum-copper hardening fluid, thereafter being sectioned and stained in different ways.

Numerous degenerated fibres are found in the *pneumogastric trunk* taken from the neck, the proportion of diseased to healthy fibres being about one to four. The myelin of the medullary sheath is seen to be broken up into fragments, or even into globules of small size, giving to the fibres a beaded appearance. Where the fragmentation of the myelin is not far advanced the nerve fibre looks exceedingly like a string of sausages. The neurilemma has remained intact, and where the medullary sheath is absent the continuity of the fibre comes to be represented by the merest thread—the shrunken neurilemma. The chemical composition of the myelin seems also to undergo a change, for the globular remnants of myelin stain more and more faintly with osmic acid as the breaking up process proceeds.

The *sympathetic nerve trunk* taken from behind the carotid sheath shows much the same changes in its medullated fibres as the vagus, but the diseased elements are decidedly more numerous, there being very few healthy fibres left.

The *anterior crural nerve* contains a great many diseased fibres. In the terminal branches there is hardly a healthy fibre to be seen, but higher up in the trunk itself the diseased fibres are less numerous. In longitudinal sections of the anterior crural nerve treated by Robertson's modification of Heller's method,<sup>1</sup> the appearances already noted are seen. In addition, there is observed a finely granular condition of the myelin, even when not broken up into fragments or globules. Further, in quite a number of the fibres the myelin is seen to consist of a series of filter-funnel-like structures, and elsewhere the medullary sheath is represented by a delicate basketwork of dark fibrils.

Fraser and Bruce<sup>2</sup> describe this "imbricated or funnel-

<sup>1</sup> Robertson, W. F., *Pathology of Mental Diseases*, 1900, p. 20.

<sup>2</sup> Fraser and Bruce, *Edinburgh Medical Journal*, 1896, vol. xlii, p. 300.

shaped" appearance, in their case of diabetic neuritis, in sections stained with hæmatoxylin and eosine, and count such as evidence of degeneration. Lately, however, Wynn,<sup>1</sup> in his researches into the finer structure of the medullary sheath in cats and dogs, has shown this chain of cones to be the normal arrangement. The lattice-like structures in the medullary sheath—the so-called neuro-keratin network—is described by many histologists as the normal framework of the myelin, but is considered by Wynn to be an artefact. In these longitudinal sections of the anterior crural the individual nerve fibres are more widely separated from one another than normally, and in sections treated with nuclear stains numerous elongated and oval nuclei are seen between and on the nerve fibres. Some of these nuclei on the nerves are of large size, and here and there nuclei in process of division, or but recently divided, may be made out.

There is not, however, so far as I can see, any round-cell exudation around the smaller blood-vessels, and degenerative vascular changes are likewise practically absent. Even in transverse sections of the nerve trunks around the spinal cord in the lumbar and other regions, it may be seen that many diseased fibres exist, and here are found minute vessels with thickened homogeneous walls, staining faintly with eosine, and very evidently affected with the hyaline change.

Fraser and Bruce consider their case of neuritis to be of the type termed by Gombault<sup>2</sup> "néurite segmentaire periaxile," and lay considerable stress on the persistence of the axis cylinder. That such occurs in the "imbricated or funnel-shaped" nerves I have no doubt, for, as has been shown, these are perfectly normal fibres. Gowers<sup>3</sup> says that the axis cylinder in parenchymatous neuritis becomes interrupted at the points where the myelin no longer exists. In these Heller preparations the degenerated nerves eventually come to appear as fine black threads, with little varicosities here and there. In no place is the thread broken through or interrupted. This conforms pretty accurately to Gombault's description of persistent axis cylinders, though, as a rule, axis cylinders don't stain by Heller's method. Nevertheless, in many healthy nerves a black thread can be seen running along the centre of the nerve fibre through the less deeply stained filter-funnel structures, so it is quite possible that these fine varicose

<sup>1</sup> Wynn, *Journal of Anatomy and Physiology*, April, 1900.

<sup>2</sup> Gombault, quoted by Fraser and Bruce.

<sup>3</sup> Gowers, W. R., *Diseases of the Nervous System*, 1899, vol. i, pp. 65, 84, 147, 163, and 164.



threads really are persistent axis cylinders, though the extreme tenuity of the structures and my inability to see a definitely varicosed axis cylinder in sections deeply stained with hæmatoxylin argue against it.

*Rectus muscle.*—The muscle fibres as a whole are cloudy and granular, and there is considerable variation in their size. Very few fibres show distinct transverse striation, and many of them show a longitudinal striation, with here and there a longitudinal separation of the fibrillæ. The muscle elements are more widely separated from one another than is normal, and there is a very considerable increase of the interstitial connective-tissue fibres and connective-tissue cells, the latter in some parts being very numerous. There is also marked proliferation of the nuclei of the sarcolemma. Sections stained with osmic acid show a complete absence of fatty changes in the degenerated muscle fibres. In the case reported by Fraser and Bruce, fine fat granules were found between the fibrillæ of the muscle, and to this they attributed the increase in distinctness of the longitudinal striation.

The *spinal cord* is examined, and throughout there is found an overgrowth of the neuroglia, but in no single column can any special sclerosis be said to exist. The large multipolar nerve cells of the anterior cornua are degenerated, and chromatolysed and excessively pigmented cells are present to the extent of from 12 to 25 per cent. These changes are most marked in the lumbar region, and more evident in the dorsal than the cervical region, but nowhere is any group of cells specially affected.

The *medulla oblongata* is also examined, and there is, I must confess, a great temptation to describe the nerve cells in the floor of the fourth ventricle as degenerate. The cells of the motor nuclei (hypoglossal and vagus) stain well, while the cells of the sensory nuclei—especially those of the nucleus gracilis and nucleus cuneatus—show all the signs of advanced chromatolysis. Dr. W. K. Hunter, however, who has considerable experience in these matters, thinks that these cells are normal, resembling in structure the cells of Lockhart Clarke's column. There is hyaline degeneration of the small blood-vessels of the cord and medulla, but nowhere can I see extravasation of blood into the perivascular canals, as Dickinson has described.

*Considerations and conclusions.*—In spite of the fact that peripheral neuritis, as an accompaniment of diabetes mellitus, is well recognised and has been much studied clinically, there



are remarkably few records of pathological examinations of the peripheral nerves in such cases.<sup>1, 2, 3, 4, 5</sup> Further, Dickinson<sup>6</sup> this year, in his lectures on "Considerations touching the Pathology and Relations of Diabetes," does not accept it as proved that the loss of knee-jerk is invariably due to peripheral neuritis, while Williamson<sup>7</sup> and others have found and described sclerotic changes in the posterior columns of the spinal cord in cases where the peripheral nerves presented healthy and normal appearances.

Now, in this case there were very slight sclerotic changes in the posterior columns of the lumbar and cervical regions, but these changes were at best equivocal, and were only part of a slight general sclerosis. There is, however, a well marked neuritis—mainly parenchymatous, but also interstitial—in the peripheral branches of the anterior crural, abundantly accounting for the loss of knee-jerks and slight neuritic symptoms, viz., muscular weakness, shooting pains, and, perhaps, œdema. Further, there are changes in the rectus muscle such as one would expect to find in any neuritis of some chronicity and intensity.

The occurrence of pulmonary disease, especially phthisis, is common in diabetes (Williamson has found tuberculosis of the lungs *post-mortem* in about 50 per cent of the cases, and Seegen and Frerichs have got almost similar results), but, so far as I am aware, no very satisfactory explanation of this has been yet afforded.

Tubercular disease affects the lung more often than any other organ of the body, so there is little wonder that in diabetes, where malnutrition is so extreme, phthisis should result. But that there are very special reasons why tubercular disease of the lung should have occurred in this, as probably in other cases also, I will attempt to show.

"Phthisis," Gowers remarks, "is a very frequent complication of neuritis, and bears a double relation to the neuritis, sometimes being its consequence and sometimes it cause. Pneumonia,

<sup>1</sup> Fraser and Bruce, *Edinburgh Medical Journal*, 1896, vol. xlii, p. 300.

<sup>2</sup> Pryce, "A Case of Perforating Ulcers of Both Feet, Associated with Diabetes and Ataxic Symptoms," *Lancet*, 2nd July, 1897.

<sup>3</sup> Eichorst, *Revue Neurologique*, 1897.

<sup>4</sup> Auché, B., "Des alterations des nerfs peripheriques chez les diabetiques," *Arch. de med. experiment et d'anat. path.*, Par, ii, 1890.

<sup>5</sup> Saundby, R., *Lectures on Renal and Urinary Diseases*, 1896, pp. 301, 303.

<sup>6</sup> Dickinson, *Lancet*, 2nd February, 1901.

<sup>7</sup> Williamson, *Diabetes Mellitus*, 1898, pp. 245, 209, and 210.

too, frequently causes death in the acute forms of neuritis, and it is difficult to avoid the suspicion that its form and course are determined by coincident neuritis of the pulmonary branches of the vagus, either primary or secondary to the inflammation of the lung."

Now, though merely the trunk of the vagus, and none of the pulmonary branches, were examined by me, I think it can be shown how the suspicion of Gowers, in respect to pneumonia in cases of neuritis, may be an actuality in the present case as regards phthisis. Extensive degenerative changes were found in the pneumogastric nerve, and in the sympathetic of the neck. "While it has been proved that perhaps the most important factors in the causation of traumatic pneumonia after section of the vagi in animals are the unconscious inhalation of particles of food and the abolition of the reflex act of coughing, nevertheless it must be remembered that owing to laboured and difficult respiration the lungs become overcharged with blood, and this condition of congestion is followed by serous exudation and even by exudation of blood into the air-vesicles. Then there is probably a partial paralysis of the pulmonary vaso-motor nerves, and an interference with the trophic fibres going to the pulmonary tissues" (Landois and Stirling).<sup>1</sup> This neuritis of the vagi, however, does not, in a chronic condition such as diabetes, so often bring about a septic pneumonia, as happens after section of the vagi, but by interfering with the trophic influences which pass downwards, generally lowers the vitality of all the structures of the lung. By diminishing and in part interrupting the sensory impressions from the mucous membrane, &c., the centripetal or afferent impulses, so intimately concerned in maintaining normal reflex respiration, no longer stimulate the respiratory centre to the same extent. Thus, we have brought about in a lung, the tissues of which are already far from healthy, a further degree of lowered vitality from the interference with the trophic nerves. Then there is the exudation into the alveoli, caused by partial vaso-motor paralysis, which, from diminished sensitiveness of the alveoli and bronchioles, and the sluggishness of the cough reflex, remains to afford a nidus for the tubercle bacilli.

Under these conditions it is not surprising that the tubercle bacilli gain a footing and luxuriantly flourish in the lung. Moreover, this neuritis of the vagus explains how the cough and expectoration are so comparatively slight in tubercular

<sup>1</sup> Landois and Stirling, *A Text-book of Human Physiology*, 1888, pp. 611, 612.

phthisis occurring in diabetic subjects, and how the lung changes are so frequently out of all proportion to the symptoms. A "galloping consumption" is quite intelligible with a diseased vagus, and the want of removal of the caseous matter by powerful expectoration must very quickly lead to infection of the lung all around, and to extensive insufflation pneumonia. In connection with the case under consideration, it is to be remarked that the phthisis was very insidious and rapid in its development, and expectoration was small in quantity in comparison with the active excavation which was going on in his lungs. The cough, likewise, is noted in the report as never being severe, and this is further indicated by the fact that during the last weeks of life 5 minims of dilute hydrocyanic acid twice daily sufficed to keep quiet the little cough there was.

Passing on to the cord, we find that chromatolytic and pigmentary changes were present in the large nerve cells of the anterior cornua, this condition being most marked in the lumbar region, and more marked in the cervical than the dorsal region. Apart from Bowlby's<sup>1</sup> description of "marked atrophy" of the motor nerve cells in the lumbar region of the cord, I can find no allusion to nerve-cell changes in diabetes, though degenerations have been described by many observers in the nerve cells in cases of peripheral neuritis, and, experimentally, it has been proved that destruction or degeneration of a nerve cell causes degeneration in its nerve fibre, and *vice versa*. Some say the change in peripheral neuritis occurs primarily in the nerve fibre, others that the nerve cell is the first to suffer.

It is impossible to form any opinion from this case. The demonstration that the terminal branches of the anterior crural nerve contained fewer healthy fibres than the trunk of the nerve itself is in harmony with the usual findings in cases of peripheral neuritis, and seems to imply that the terminal branches suffer first, but one is not so sure if we can infer from this that the nerve fibres suffered primarily to the changes in the nerve cells.

In discussing the pathology of diabetes, Lazarus-Barlow<sup>2</sup> remarks that of "the pathologico-anatomical changes found in the body of a person dead from diabetes, two alone are probably primary. These are (1) fibrotic and other changes of the pancreas, and (2) tumours and lesions in or about the medulla

<sup>1</sup> Pryce, "A Case of Perforating Ulcers of Both Feet, Associated with Diabetes and Ataxic Symptoms," *Lancet*, 2nd July, 1887.

<sup>2</sup> Lazarus-Barlow, *A Manual of General Pathology*, 1898, p. 620.

oblongata and the vagi." In this case the pancreatic lesion was slight, and, in view of Minkowski's experiments, could not have been responsible for the diabetes. No more in this case can the blame be laid on the medulla oblongata. The neuritis of the vagus may have played a part in originating the diabetes, and, in cases where the medullary or vagal lesions really do represent the cause of the diabetes, one is naturally led on to think that, from the common causative factor, phthisis might be regarded as much a part and a symptom of diabetes as glycosuria itself.

I take this opportunity of expressing my indebtedness to Dr. T. K. Monro for the help he has ungrudgingly afforded me while working at this subject, and for allowing me to make use of his clinical report. I thank Professor Workman for the material examined, and also for permission to quote his *post-mortem* report.

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#### MEETING XVI.—3RD MAY, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

##### I.—CASE OF GOUT.

BY DR. G. S. MIDDLETON.

A. B., aged 64, clerk, has, on several occasions since the end of 1899, been under treatment in the infirmary with well-marked gout. The earliest attack occurred fully twenty-five years ago, and was absolutely sudden in its onset. The pain affected the balls of both big toes, and was so severe that he had to be carried home from his office. In a day or two the toes became swollen, red, and very hot and exceedingly tender. He was confined to bed for six or seven weeks.

Prior to this attack he had never tasted whisky or wine of any kind, but for some months he had been irregular in his habits, seldom getting a good dinner, but contenting himself with some bread and cheese and a glass of beer. He had never taken beer to excess. His father is said to have died of gout at the age of 65.

Five years later a second attack occurred, affecting the same



joints. Two or three years after that attack other joints became affected, and for the past ten years he had at least one attack each year. But in the past few years he has taken beer occasionally to excess, and has taken whisky also to relieve the pain.

The patient's hands exhibit typically the deformities of chronic gout, both in the phalangeal and metacarpo-phalangeal joints, and some of them present marked chalk stones. Some chalk stones are also seen in the pinnæ of the ears. In the feet at various times typical gouty deposits have been seen, especially in the balls of the great toes. In the heels, also, acute inflammatory attacks have occurred with suppuration. On the cheek under the right eye there has for ten years been a slight ulcer, generally covered with a thick scab. In all the discharges from the ulcers, and from the ulcerating surfaces round the chalk stones, urate of soda in fine acicular crystals has been very abundant.

This is a case of chronic gout, and of a nature very uncommon in this neighbourhood. It is the third case of the kind that Dr. Middleton has seen in hospital, the other two being cases imported from the south, while this man is a native of Ayrshire. In regard to causation, it is probable that heredity plays a great part, and there does not appear to be any reason to doubt his statement that intemperance in the use of beer had nothing to do with the primary attack. It is presumably what is known as "poor man's gout."

## II.—NOTES ON IRIDEREMIA, WITH REMARKS ON THE HISTOLOGICAL EXAMINATION OF CASES.

BY DR. LESLIE BUCHANAN.

The word "irideremia" is derived from two Greek words which, taken in the simplest sense, mean "absence or want of iris." By many it is considered as applying specially to that form of absence of the iris which is congenital. Generally speaking, however, it may be considered as synonymous with the word aniridia, which means practically the same thing.

Some writers use the word irideremia in speaking of cases in which the absence of the iris is incomplete, and reserve the word coloboma, which means a mutilation, for those cases only in which less than half of the iris is absent. Such use of these words must be taken as inaccurate, or at least unwarranted by etymology.



The iris may be absent completely, so far as the unaided eye can tell, as (1) a congenital defect; (2) a result of injury (including surgical interference); (3) a result of atrophy produced by pressure, as by a dislocated lens, &c.

Traumatic aniridia is moderately frequent, but the form of absence produced by pressure is very rare, and is, moreover, generally incomplete. Congenital absence of the iris is seen in only 1 in 12,000 eye hospital cases, and is generally accompanied by some other defect of the eye, as corneal or lenticular opacities.

Congenital aniridia tends in a marked manner to run in families, and many instances of this fact might be quoted. Only one, however, will be mentioned, namely, that quoted by the translators of the French edition of Mackenzie's work, in which the defect was noted in ten individuals involving four successive generations. It is usually bilateral, but sometimes only one side is affected.

Having seen a case some three years ago in which it was very difficult to decide, from the appearances of the anterior part of the eye, whether the defects found were congenital or not, the writer considered that it would be of interest to investigate carefully a number of cases of aniridia of varied origins and compare the results found.

It is a matter which is certainly of interest from a purely ophthalmological point of view, and which might readily be of importance in a medico-legal aspect, to be able to decide, from the histological appearances, whether or not in any given case aniridia is congenital or is the result of an injury.

CASE I.—The case which in special raised this point was that of an old woman, M. I., aged 70, who came to the Eye Infirmary suffering from an ulcer of the left cornea. The other eye was in all respects normal, and the iris was deeply pigmented.

The ulcer of the left cornea was purulent, and had penetrated deeply when first seen, and there were hæmorrhages under the conjunctiva which rendered it advisable to remove the eye. The corneal ulcer perforated in a pinhole opening on the day before the operation was to be performed, and a minute tag of whitish material appeared in the aperture.

Owing to the diminution of tension of the globe, the eye was slightly compressed during enucleation, but no structure escaped. When examined, it was found that the eye contained neither an iris nor a lens, and, although exhaustive search was made, no evidence of the past existence of either structure



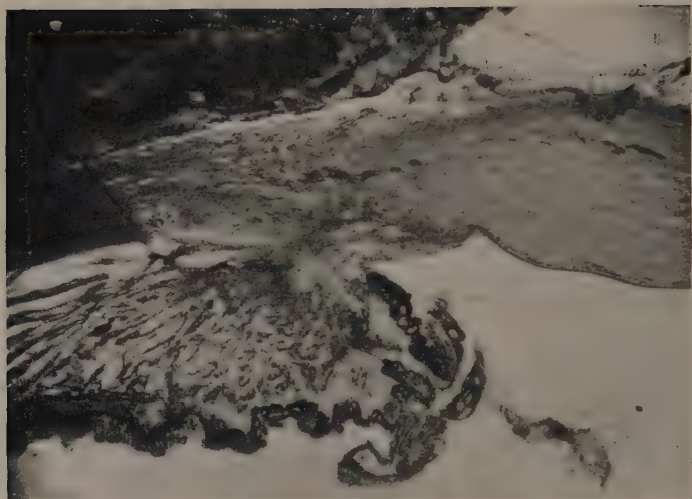


FIG. 1.

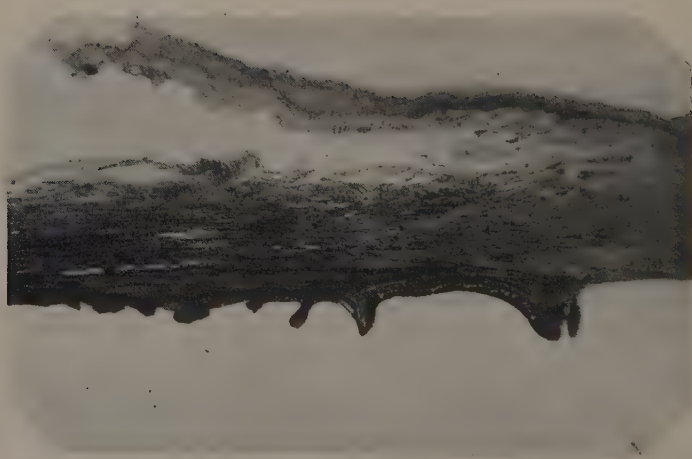


FIG. 2.







could be found. Close questioning of the patient revealed no history of injury, and the only fact relating to the eye which was discovered was that seventeen years before she had quite suddenly discovered that the sight of the eye was highly defective.

The patient could not remember noticing any peculiarity in the appearance of the eye, nor did she remember of any friend or relation making any remark on the subject.

Histological examination was carried out with great care and with special reference to the discovery of evidence of injury in the past, as it was considered that some injury in childhood, which possibly was now forgotten, might have left a scar or other trace. No such evidence was found, however, and the general appearance of the parts was rather against this theory, as, except for the existence of a recent or comparatively recent localised cystitis, no change, except, of course, in the cornea, was found.

The next question, then, to be taken up was whether or not the lens was absent as a result of injury, say, by a minute punctured wound. The ciliary region was carefully examined with reference to the existence of fibres of the lens ligament, but here also only a negative result was obtained.

Some years before, the writer had made sections of an eye which had contained a chip of iron (sticking in the ciliary body) for forty-nine years, and, remembering that in this case the lens was found to be completely absorbed, these sections were again looked over. In all sections numerous fibres of the lens ligament were easily discovered, and absorbed stains, such as eosin, orcein, &c., well. Similarly, in several other cases where the lens was absent as a result of operation or accident, distinct evidences of the existence of the lens ligament were found, so that it was highly probable that in the present case no lens ligament had existed.

The state of the ciliary body as regards muscle was also examined and compared with the previously seen cases of traumatic aphakia. The muscle in the case of longest duration was markedly atrophic, and in the case at present under consideration was almost entirely replaced by fibrous tissue, the ciliary body being of about the usual size. Little assistance could be obtained from this point. The eye thus gave no evidence of having been injured at any time, and the absence of iris and lens was considered to be of congenital origin rather than the result of injury.

The appearances of the parts about the ciliary body are shown in the photograph of a section (Fig. 1).

It is easily seen that the filtration area is but little changed. The ciliary body itself is, roughly speaking, normal, and is covered by epithelium, which is smoothly and evenly rounded off. The pigment epithelium of the ciliary body bends forwards and almost reaches the filtration area. A thin layer of fibrous tissue, however, intervenes, and lies on the surface of the epithelium. This thin fibrous strand is seen to take its origin from the position which the iris should occupy, and stretches only a short distance into the aqueous chamber. It is totally unpigmented, and lies quite free of the pigment epithelium in most of the sections, and also in some it is seen to have cells apparently of inflammatory origin adherent to it.

This delicate strand may be taken to be an abortive attempt to produce an iris on the part of the mesoblastic structures, whilst the epiblastic structures have made no attempt to pass forwards past the folded position of the ciliary body. It has undoubtedly firm and apparently permanent connections with the ciliary body, but no evidence can be found of endothelial cells on its anterior surface, which is, perhaps, the result of manipulation.

The decision in favour of the congenital as against the traumatic origin of this case was delayed so that further evidence might be brought to bear on the subject.

Several cases of aniridia of undoubtedly traumatic origin were examined, and in each of these evidence of the injury to the iris was distinct. Even after six years (in one case) the stump of iris, which was adherent to the base of the cornea (glaucoma), was still rough and irregular.

In several cases where the injury was recent the filtration area was torn away, the canal of Schlemm being thus put into direct communication with the aqueous chamber, whilst in others the gap from which the iris had been torn was still rough and manifestly torn.

Quite recently a case was examined in which there was no doubt as to the nature of the defect, for the child was seen in infancy and the iris was then completely absent in both eyes, whilst there was distinct opacity of the lens.

CASE II.—The patient was a girl, E. S., aged 8 years, and high tension had developed after an operation (discission) for the removal of the lens. A scleral ectasia developed, and the eye being painful was removed.

Histological examination of this case showed that there was a stump of iris, of small size, pressed forwards against and closely applied to the filtration area. The stump of iris reached only to the extremity of Descemet's membrane, and was covered posteriorly by pigmented epithelium. The photograph (Fig. 2) serves to show the general appearances of the parts, and readily explains the cause of the high tension.

So far, then, as the actual appearances of this case go, the nature of the defect is clear.

The comparative infrequency of congenital aniridia (about 1 in 12,000 eye hospital cases) renders it extremely rare to get a case of this nature to examine histologically, and as the case here recorded corresponds accurately with the five cases which the writer is aware of as previously recorded, the findings may be relied upon as fairly constant, that is to say, that in congenital aniridia the defect is not absolutely complete.

To return, then, to the first case, in which doubt existed as to the origin of the defects formed, the evidence produced seems to point to the origin being congenital, in spite of the fact which was previously noted that no such defect had ever been noticed.

This might be accounted for by the fact that the iris of the other eye was deeply pigmented, so that the contrast would not have been so evident as if the iris of the normal eye was blue, in which case the black void in the defective eye would be very striking.

The defects, then, in the first case constitute a very rare anomaly, for rare as irideremia is, congenital aphakia is still more so, and, in consequence, the combination is extremely unusual.

Foster, of New York, in an excellent paper on "Irideremia," remarks upon the lack of uniformity in examining the lens in cases of irideremia, and gives figures which show that in the majority of cases recorded no note is made of the state of the lens, whilst in many of those cases in which a note is made the lens is defective in some respect. This may, however, only indicate that it is mainly in cases which do show lenticular disturbance that the results of examinations are recorded.

If, then, in this case the lens is really absent as a congenital defect, and there is no evidence of the existence of a cicatrix such as was found by Rindfleisch in his case, the theory of

Mantz will not hold good, and one of the other numerous theories must be applied.

The theory of Steiler, that the defective development is due to too early obliteration of the vessels of the anterior vascular capsule of the lens, would certainly apply to this case as readily as any more recent conjecture.

The congenital absence of the lens in an eye well formed in its main features must, of necessity, raise an interesting question as to the true cause of the invagination of the secondary optic vesicle, but so little is at present known of the part played by purely mechanical agencies and effects in development that the matter cannot be taken up here.

As bearing upon the differential diagnosis between aniridia of traumatic and congenital origin, a few remarks may be made upon the varied nature of the injuries to the eye capable of producing the former class of case.

In the vast majority of cases it is an injury with a blunt instrument, as a hand, crust of bread, poker, &c., which is the agent. In most cases there is rupture of the corneo-scleral junction, but occasionally the cornea is cut across.

In a smaller number of cases the iris is removed completely, in consequence of an injury with a large object with a small point, as an irregular chip of iron, &c. In such a case the impact of the large body probably causes the separation of the iris, whilst the actual removal from the eye is accomplished by a hurried escape of the aqueous humour through a small opening in the cornea.

In one case of this kind seen by the writer two years ago there was only a small linear vertical wound of the cornea, not more than 3 millimetres in extent, and the absence of the iris was complete.

Praun mentions the existence of two recorded cases in which the iris was separated from its ciliary attachment by a blow with a blunt instrument, which caused no external wound of the eye at all. The explanation of these cases is that the separated iris ultimately becomes absorbed after lying in the aqueous chamber for a time.

With regard to traumatic aphakia, also, it is to be noticed that the nature of the injury is very varied. In most cases there is an extensive wound, but the writer has seen two cases in which, after a very minute punctured wound with chips of iron, the lens and its capsule have completely disappeared, whilst fibres of lens ligament remained to prove the past existence of a lens.

In conclusion, the writer desires to acknowledge the kindness of Drs. Robertson and Hinshelwood in giving him access to the clinical record of Cases I and II respectively.

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#### III.—RUPTURED GASTRIC ULCER.

By DR. DAVID NEWMAN AND DR. GEORGE S. MIDDLETON.

Dr. Newman and Dr. Middleton gave an account of a number of cases of gastric ulcer. They included two cases which terminated fatally after operation, three cases in which a cure was effected by operation, and two cases where spontaneous cure occurred without operation.

#### IV.—NOTES OF A CASE OF UNILATERAL ACUTE RETROBULBAR NEURITIS.

By DR. ERNEST THOMSON.

In bringing under your notice a case of acute retrobulbar neuritis, I make no pretence of reading a paper on the subject in general. These cases are comparatively rare; other writers, however, and notably Mr. Nettleship, have had experiences more or less like mine. This case is interesting in itself because it was very acute, recovery was rapid and practically complete, and because there was a direct history of exposure to cold, and no personal or family history to account for the complaint.

You will pardon me if I digress so far as to state that Mr. Nettleship divides his extensive series of cases of retrobulbar neuritis into two groups—the symptomatic and the idiopathic. In the symptomatic group are placed those forms in which the inflammation is communicated to the nerve by the various parts amongst which it passes between the chiasm



and the eye; in the idiopathic group, those in which a more or less definite history of functional or organic constitutional disease can be obtained, or in which there has been exposure to cold, or in which no cause can be ascertained. Mr. Nettleship's paper will be found in the *Ophthalmic Hospital Reports*, vol. xv, part 1.

Miss R., aged about 21, was sent to me on 28th June, 1900, by her physician, with the complaint that during the last three or four days she had become nearly blind in the left eye. The blindness was associated with pain at the back of the eye, which became worse on moving the eye, and with neuralgia of the left side of the face.

*Personal and family history.*—The patient was a stout well-looking young lady, presenting no indications of being in other than thoroughly good health. She had had no illness nor extra hard work. She had cycled a good deal, and was always liable to become much heated on exertion. The family history threw no light on the case.

*Clinical history.*—On 16th June she went for a drive; the road was hilly, and she walked all the hills and became very much heated. Driving home in the evening the wind was cold and damp, and she had the left side of the face turned to it. That same evening, after getting home, she went out again in the rain and got her feet wet, and failed to change her clothes for an hour after coming into the house.

On the fifth day after this she first noticed a cloudiness of the sight of the left eye, and was very soon able to determine that this cloud was especially dense about any object directly looked at; while the peripheral parts of the field of vision were comparatively clear. The dimness of vision became progressively greater for six days more, when it reached its maximum. In her own words, "she could not distinguish one object from another, but could tell on which side of a room the window was, but in the dark she could not see the light of a lamp or candle."

On the seventh day I saw her, and found the following state of affairs:—

The external appearance of the eyes was normal as regards the cornea and conjunctiva. She had been using belladonna for the left eye, so that the pupil reactions could not be accurately judged. The right pupil reacted to light, and on convergence and accommodation, but reacted less quickly to light admitted to the left eye than did the left pupil to light admitted to the right eye, and this in spite of the fact that the

left sphincter may have been slightly under the influence of belladonna. This observation pointed to faulty conduction from the left retina.

Pain was elicited on causing the eyes to turn to the right and left, but especially to the right. There was decided pain on pressing the eye back into the orbit.

The vision was—right,  $\frac{1}{3.5}$  Snellen; left, hand movements at 8 inches.

On ophthalmoscopic examination the patient was unable to distinguish the light from the ophthalmoscopic mirror.

The fundus changes were slight in proportion to the visual defect. The optic disc was slightly prominent and hazy, and hyperæmic. The veins were over full and more or less tortuous, with marked pulsation. There were no hæmorrhages or effusions.

The diagnosis was acute retrobulbar neuritis; the prognosis fairly good, but guarded; and the treatment, mercury and iodide, a blister on the left temple, and rest in bed.

*Progress.*—Three days later (1st July) she could count fingers at a foot away, and the pain was less. By 5th July V. =  $\frac{1}{60}$ , but still she could not distinguish the light from the ophthalmoscope mirror when directed to the macula: there was still an absolute central scotoma. The right eye remained normal.

On 10th July V. =  $\frac{2}{60}$ , and the largest letters of near vision types. Pain almost gone. Ophthalmoscopically optic disc less prominent and outlines more distinct.

A week later (17th July), and four weeks from the onset, she greatly surprised me by seeing  $\frac{1}{6}$  and one letter of  $\frac{4}{5}$ . The central scotoma, so far from being absolute, was fast disappearing. At 4 metres she could distinguish 10 mm. red and green squares, but called blue and yellow, green and white respectively. The peripheral field for white was full.

In another week (23rd July) V. =  $\frac{1}{5}$  and partly  $\frac{4}{5}$ .

At this time she drew my attention to the fact that although her vision was now so good, there was a peculiar foggiess or darkness about objects when seen with the left eye as compared with the right. This was obviously a disturbance of the light sense, and on reducing the illumination of the types, R.V. =  $\frac{4}{5}$ , L.V. =  $\frac{4}{5}$ . Ophthalmoscopically all appearance of activity had passed away and the disc was slightly pale. The mercury and iodide was stopped, and iron and quinine substituted.

Two months later (26th September) the vision was the same or slightly better, the refraction was estimated and

found almost emmetropic, and a muscular error was corrected with prisms of low degree.

The pallor of the disc was noted to be almost exactly like that seen in toxic amblyopia.

I did not see her again until 20th April, 1901, when she came at my request.

The vision was  $\frac{4}{5}$  Snellen with either eye.

The light sense was tested with Parinaud's types, and was found equal in the two eyes, in so far as could be gauged by this method. The visual field for white was full.

Central vision was apparently perfect. She could distinguish between a small ace of spades and an ace of clubs and between hearts and diamonds equally with either eye at 4 metres distance; and yet, in spite of it all, she declared there was some difference in the illumination of objects as seen with either eye separately. An object looked darker with the left eye than with the right. In one of Mr Nettleship's cases, a slight one, in which there seems to have been some retinitis, a picture was said to look as if in the shade with the affected eye, while appearing with the normal eye to be in sunshine. The description most accurately tallies with that offered by this patient.

As to the exact anatomical nature of this case I am not prepared to speak. Pathological examination must be an almost unique occurrence. The history of a definite exposure to cold after being heated tallies with the history given by Fuchs in his *Text-Book*, of retrobulbar neuritis occurring in men after hunting. The rapid course (although, indeed, the onset was delayed five days, on the assumption of chill as the cause) and the rapid recovery seem to point to a severe but temporary disturbance not dependent on any local or general disease. Such a disturbance I should imagine to be vasomotor in character.

MEETING XVII.—10TH MAY, 1901.

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*The President, MR. H. E. CLARK, in the Chair.*

I.—CASE IN WHICH A LARGE EPITHELIOMA OF THE LARYNX  
WAS REMOVED BY THYROTOMY.

BY DR. DAVID NEWMAN AND DR. FULLARTON.

The patient, Miss M'K., consulted Dr. Fullarton on 30th March, 1900, on account of hoarseness. She had been in Australia for many years, and when there was troubled with her throat, but had never been so hoarse as at present. The doctors in Australia considered the disease to be tubercular in origin. She recovered from these attacks, and for seven years the throat remained well. The present illness followed an attack of influenza three months ago. On examination with the laryngoscope, impaired movement of the right vocal cord was observed, with some redness and thickening of the free border at a point rather anterior to the junction of the anterior and middle thirds. When Dr. Fullarton examined the case he was suspicious of malignant disease, but the appearances were not sufficiently characteristic to enable him to pronounce an opinion.

*25th June, 1900.*—The redness now shows a distinct outgrowth at the free margin of the cord, and appears to have involved the lower surface to a considerable extent. The aphonia is more marked. During the autumn little change took place further than a slight increase in the swelling.

*4th January, 1901.*—The whole right vocal cord has become infiltrated and greatly swollen, and now is beginning to interfere with respiration, and a slightly enlarged lymphatic gland is observed in the front of the larynx.

Dr. Newman was asked to see the case, and came to the opinion that it was one of epithelioma, and decided that an immediate operation was necessary.

The patient was admitted to the Glasgow Royal Infirmary, and thyrotomy was performed. On the larynx being opened, the tumour was found to be much more extensive than appeared on laryngoscopic examination, extending below the

vocal cords on both sides. The whole of the soft parts were completely removed from the base of the epiglottis to the lower margin of the cricoid cartilage.

The patient made a good recovery, and there has been no recurrence (27th September, 1901).

## II.—CYSTIC DISEASE OF THYROID BODY, WHERE SPONTANEOUS CURE FOLLOWED THE FORMATION OF AN ABSCESS.

BY DR. DAVID NEWMAN.

The patient, Mrs. P., was first seen in 1889 at the Royal Infirmary Out-door Department for disease of the throat. At that time there was simple enlargement of the thyroid body, the gland being about the size of a walnut, hard and firmly fixed. There was no evidence of cystic formation, and otherwise the patient enjoyed good health. Small blisters were applied, and iodide of potassium administered internally. In three months the swelling disappeared, and the patient was not again seen by Dr. Newman until January, 1900, when the patient consulted him privately. At this time there was a very large swelling of the right lobe of the thyroid body. The swelling was firmly fixed, and extended from the lower jaw to the clavicle. The patient suffered from considerable dyspnoea, severe irritating cough, and dyspepsia. On examination with the laryngoscope, there was seen to be paralysis of the right vocal cord. The patient was very anæmic and extremely weak, so that the question of excision of the diseased organ could not be entertained. An exploratory puncture was made with a small aspirator needle, when the presence of innumerable small cysts was discovered. These were tapped repeatedly, as many as a dozen punctures being made on each occasion, and from each cyst from 20 drops to 1 drachm of clear fluid was drained off. By this means the swelling was considerably reduced, and by the end of February the patient experienced considerable relief.

In May a very sudden increase in size occurred, due to a spontaneous hæmorrhage. This caused the patient great suffering, and she was admitted into the Central Nursing Home. After being there for three weeks she was sent to the country, and while there an abscess formed, associated with high fever and serious constitutional disturbance. The patient was readmitted to the home, the abscess opened by free incision and drained, a drainage-tube being kept in until the end of September.



By the beginning of January, 1901, the whole swelling had completely disappeared, and the patient now (27th September, 1901) enjoys excellent health.

### III.—MULTIPLE EXOSTOSES IN BOTH EXTERNAL AUDITORY CANALS.

BY DR. J. GALBRAITH CONNAL.

This condition is rarely met with. The man is 55 years of age, and a butcher to trade. I saw him for the first time about eighteen months ago, when he complained of dulness of hearing and tinnitus of a "rumbling" character. These symptoms, he thought, were due to a cold in the head.

Examination showed both external auditory canals filled with cerumen, and when this was removed the exostoses were discovered. In the right ear there were three sessile masses—two anteriorly and one posteriorly—leaving between them a little gap through which the tympanic membrane, with a small part of the handle of the malleus, could be seen.

In the left ear there were two sessile masses, opposed to one another anteriorly and posteriorly, almost occluding the canal.

Regarding the patient's personal history, he says he has always been a strong, healthy man. Five years ago he had an attack of "sciatica," and since then an attack of "rheumatism" in his shoulder and fore-arm. He mentions that in younger life he was a great swimmer.

There is great difference of opinion regarding the etiology of this condition. Gout, rheumatism, and syphilis have all been mentioned as predisposing causes. Inordinate sea-bathing has also been assigned as a cause, and the prevalence of aural exostosis among the South Sea Islanders gives some support to this view.

Virchow is of opinion that exostoses are due to an irritative disturbance of normal bone development.

These bony processes are generally met with on the anterior or posterior walls of the canal—anteriorly, where the tympanic plate meets the horizontal plate of the squama; posteriorly, at the junction of the tympanic plate and the mastoid process. It is interesting to note that in the nose, where exostoses (septal spurs) are a very common condition, the same rule holds good that they generally form where bone meets bone or bone meets cartilage.

With respect to treatment, it is now generally agreed that aural exostoses are best left alone, except where the patient

has suppurative middle ear mischief (which this patient has not), or marked dulness of hearing with tinnitus. Here there is complaint of dulness of hearing and tinnitus, which is due to cerumen blocking up the chink between the bony processes. After removal of the cerumen he hears very well, so that I have advised him to let matters remain as they are in the meantime, but to report himself from time to time to have his ears attended to.

#### IV.—TWO CASES OF EXTENSIVE ULCERATION AND CICATRISATION OF THE PHARYNX.

BY DR. J. GALBRAITH CONNAL.

The first case is that of a little girl, 6 years of age, who is brought forward as an illustration of the extensive ulceration and cicatrisation of the pharynx which may result from scarlet fever. The anterior pillars of the fauces are almost destroyed, and there are only slight remains of the tonsils. The posterior part of the soft palate is adherent to the pharyngeal wall, and a small aperture is left leading from the naso-pharynx to the pharynx. The patient, as the result of scarlet fever, has also a purulent otitis media on both sides, and the pharyngeal condition adds to the gravity of the prognosis regarding the ear mischief.

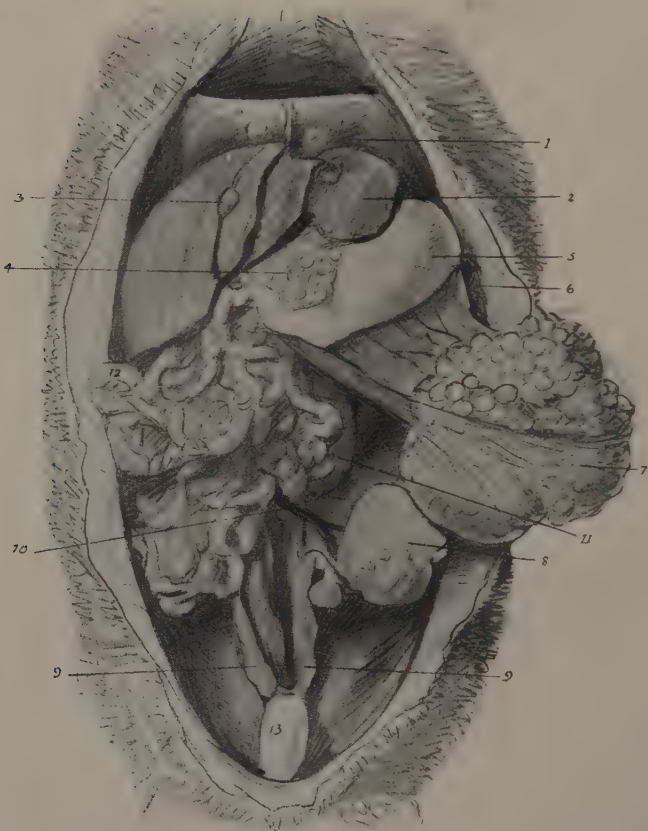
The treatment adopted was syringing the ears with boracic solution, and a considerable improvement has taken place. Nothing has been done to restore the proper passage from the naso-pharynx to the pharynx, on account of the nervous and irritable condition of the little patient, but I hope to have an early opportunity of doing so.

The second case is that of a woman, 43 years of age, with extensive ulceration and cicatrisation of the pharynx, the result of syphilis.

When seen for the first time, early in the year, she complained of great pain from a gummatous mass in the right pharyngeal wall, which disappeared under treatment. There is perforation of the soft palate in addition to cicatrisation of the pharynx, and these morbid changes are more marked towards the middle line, in this respect making a good contrast case with the preceding one, where the cicatrisation—the result of scarlet fever—is more marked in the lateral walls of the pharynx.

So far as could be made out, she had the secondary sore





### CARCINOMATOUS TUMOURS IN CAT.

1. Diaphragm—nodules on under surface; above is the thoracic cavity.  
 2. Liver—with nodule. 3. Gall-bladder—fundus of. 4. Tumour mass in gastro-hepatic omentum. 5. Stomach. 6. Spleen. 7. Tumour-mass between layers of great omentum; anterior layer partially torn open. 8. Tumour—left ovary. 9—9. Uterine cornua. 10. Enlarged left ovarian vein. 11. Left kidney. 12. Small intestine. 13. Urinary bladder.







throat about twenty-three years ago, but she affirms that her throat has never troubled her again till early in this year, when she presented herself for treatment. She is married, and has had one child, now a woman of 25 years of age. There have been no miscarriages.

#### V.—CARCINOMA IN A CAT.

BY DR. G. H. EDINGTON.

The specimens are from the body of a female cat, which was sent to Professor J. R. M'Call of the Veterinary College.

For four months previously there had been progressive enlargement of the abdomen, and latterly loss of appetite, with great emaciation, had been observed. She was sent to Mr. M'Call with suspicion of having in the uterus dead kittens. On examination, a large tumour was detected, and the animal was accordingly destroyed.

*Post-mortem examination: Thorax.*—The heart and lungs are apparently normal.

*Abdomen.*—Situated in the middle line on the central tendon of the diaphragm and on its thoracic surface is a small, nipple-like projection. This a part of a tumour which is seated on the abdominal surface of the diaphragm. On this surface several nodules are present, varying in size from that of a pin-head to that of a small bean (1.25 cm. in diameter). These are grouped for the most part on either side of the suspensory ligament of the liver.

On the convexity of the extreme left lobe of the liver is a round, white tumour-mass, measuring 1.8 cm. in diameter. It has a raised, nodulated margin, and is depressed in the centre (umbilicated). No glands are found in the portal fissure, but a nodular mass (3.75 cm. in diameter) occupies the gastro-hepatic omentum.

The great omentum contains between its layers a similar mass; this is of the size of a small cocoanut, and measures 12.5 cm. in diameter. On turning up the omentum, a smaller tumour is found on its posterior surface behind the greater curvature of the stomach, towards the pyloric end. This tumour measures 3 cm. in transverse direction.

The spleen and pancreas are apparently unaffected.

In the mesentery there are present, here and there, enlarged glands, and one of these, in the neighbourhood of the cæcum, is calcified. The great intestine has no connection with the omentum, and measures a little less than 30 cm. in length.

At the upper end of the left Fallopian tube is a large tumour. This tumour, where it joins the tube, is hard and nodular, like the masses in the omentum, but in its upper two-thirds it is of soft consistence and greyish colour. The whole mass is ovoid, and its long axis measures 5 cm. It is clearly in connection with the ovary. On the mouth of the Fallopian tube is seated a cyst of about 1.8 cm. in diameter and with clear fluid contents. The right ovary is not present.

Examination of abdominal wall failed to show any trace of mammary glands, although nipples were present.

*Microscopic examination* was made of the nodules in diaphragm, liver, great omentum, and ovary. All of the specimens showed the tumour to be composed of small, round, epithelial cells, with an alveolar arrangement in loculi of fine connective tissue. Vessels are present filled with blood, and, though lying in close contact with, are separated from tumour tissue by well-formed walls. The alveolar arrangement is seen in greatest perfection in sections from mass in great omentum. With regard to the ovarian tumour, the soft upper portion is found to have undergone necrosis in greater part. Here and there are isolated epithelial cells of large size, but staining badly. It is evidently ovarian tissue. The lower part is pure tumour tissue, and a sharp line of connective tissue with nuclei of both rod and spindle-shape separates the two portions of the mass.

In the liver the tumour tissue is seen infiltrating the connective tissue and disintegrating the hepatic cells and the diaphragmatic muscle-fibres. The epithelial cells are also found in lymph spaces.

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